CONTEXT MANAGEMENT OF ADVERTISING IN A DIGITAL ENVIRONMENT

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CONTEXT MANAGEMENT OF ADVERTISING IN A DIGITAL ENVIRONMENT

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SUMMARY

Content characteristics of advertising messaging have been well-researched in prior marketing literature, particularly in the case of traditional media. However, the effect of advertising context - where, how, and when the message is placed – on consumer response is becoming more important in today's digital media environment. As the rise of digital media has enabled (and required) marketers to respond to external changes more quickly, researchers have been more actively exploring the effect of context in marketing messages on consumer responses. My dissertation aims to deepen understanding of the effectiveness of advertising context management in today's digital environment.

In my first essay, I look at the effect of "real-time marketing" (RTM) social media messages - messages that incorporate current moments or events – on consumer engagement, and I explore differences between two varieties of real-time message: planned and improvised. I find that improvised RTM messages generate lower levels consumer engagement in social media, and I explore ways that help such messages to be more engaging. My second essay explores how consumers engagement in branded social media messages is influenced by the devices on which they view those messages (in particular, mobile phones vs. desktop computers). My analyses utilize a combination of datasets collected from different sources including research agencies, consumers, and text analysis.

CHAPTER 1: INTRODUCTION

Advertisements do not occur in a vacuum, but are embedded in or appear simultaneously with other materials such as TV programs, magazines, other ads, etc. (Kirmani and Yi, 1991). The materials within which ads are embedded are referred to as the "context" of advertising (Soldow and Principe, 1981). Advertising context varies to a great extent (Kirmani and Yi, 1991) and has changed substantially over time. Although content characteristics of advertising have been well-researched in prior marketing literature, particularly among traditional media (Batra and Keller, 2016), the effect of advertising context – where, how, and when the message is placed – on consumer responses is becoming more important in today's digital media environment. As the rise of digital media has enabled (and required) marketers to respond to external changes more quickly, researchers have been more actively exploring the effect of context in marketing messages on consumer responses.

A few notable trends must be considered when examining advertising context effects. First, the target audience for messages has simultaneously become more global and more personal. Due to the rise of email, social media, and mobile devices, messages spread more globally than was the typically the case with traditional media. At the same time, the ability to track individual customer profiles has enabled marketers to send personalized messages based on those profiles. Second, digital media has enabled faster communications between marketers and consumers. Consumer responses to firms' social media posts can be seen within minutes. The use of smartphones and similar devices allows consumers to read news articles or send messages to others more quickly and from

more diverse locations, occasions, and times. This acceleration has been a focus of empirical marketing research that uses minute-by-minute consumer activities online to measure the effectiveness of advertising (e.g., Fossen and Schweidel 2016; Lewis and Reiley 2013). Therefore, consideration of the "right" timing in advertising is more important in digital media than traditional media. Finally, communication has become more interactive under digital media. While traditional advertising was more likely to involve one-way communication from marketers to consumers, real-time dialog between marketers and consumers has now become the norm.

Considering the above trends in digital environment, my dissertation aims to deepen understanding of how advertising effectiveness is influenced by contexts that are more relevant to today's digital environment.

Effects of "Real-Time" Social Media Messages on Consumer Engagement

Brands are increasingly using messages developed and communicated in real-time, rather than through the established planning and production processes. However, little academic research exists to fully understand the impact of real-time messages on relevant communication outcomes. In my first essay, I adopt a supply-side perspective to study the impact of Real-Time Marketing (RTM) messages on consumer engagement in social media, using a sample of over 2,000 Facebook messages across 18 brands.

Despite their growing presence, I find that the use of RTM messages does not have a systematic effect on consumer engagement. However, my research also shows that the nature of the development process matters. Planned RTM messages have a positive impact on one engagement metric (Likes), while Improvised RTM messages have a negative impact on all three metrics (Likes, Shares, and Comments). Next, I identify

content and targeting factors that mitigate the negative effect of improvised RTM messages on consumer engagement. I provide evidence that improvisation jeopardizes the design effectiveness (i.e., the comprehension and creativity) of RTM messages. Finally, I suggest that firms need to develop agile marketing capabilities to effectively execute RTM.

Effects of User Device on Consumer Engagement in Social Media

Brand messages are now being delivered across multiple screens, including laptops, smartphones, tablets, etc. While researchers have explored various marketing-related dynamics of mobile phone use, relatively little is known about the unique content considerations for branded messages delivered on mobile phones. In my second essay, draw on construal level theory to propose that messages are processed at different construal levels on mobile phone (vs. PC) screens, due to consumers' psychological distance to those devices. I then use a combination of lab experiments and a unique dataset of 217 branded social media messages consumed across mobile phone and PC screens to study differences in content drivers of consumer engagement across screen types. an initial experiment, I find evidence that support of lower construal levels when consuming information on mobile phones rather than PCs. I then study the implications of this finding for the design of message characteristics in social media, finding that immediate (i.e., closer temporal distance) social media messages are more effective on mobile phones than PCs. Lastly, I discuss ways that managers can design more effective social media messages intended for consumption on mobile phones.

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CHAPTER 2: ENGAGING IN REAL-TIME: UNDERSTANDING THE EFFECTS OF "REAL-TIME" SOCIAL MEDIA MESSAGES ON CONSUMER ENGAGEMENT

2.1 Introduction

The lights went off at the stadium during Super Bowl XLVII in 2013, delaying the broadcast of the most watched sporting event in the United States by 34 minutes. Minutes after the power outage, Oreo issued a tweet stating, "You can still dunk in the dark," capturing the attention of thousands of fans waiting for the game to start. The success of Oreo's quick action also generated attention for an emerging practice in social media, real time marketing (RTM) messaging, defined here as *brand messages incorporating a transient context (e.g. news events, or holidays) in its content and published in close temporal proximity to the particular context*. The use of RTM messages by brands has grown significantly during the past several years, along with the rise of brands' marketing activities on social media such as Facebook or Twitter. Discussion of "real-time" practices appeared in the popular press in 2014 after high profile efforts by Samsung at the Oscars and Arby's at the Grammys. An industry publication, Marketing Land, reported an increase of 275% in the number of brands using RTM messages during Super Bowls 2013-2015. The New York Times reported on the growing importance of real-time practices in mobile marketing as a way of engaging consumers in an environment where "people have little patience for any interruption, especially a banner ad or 30-second commercial" (Hof 2016). Finally, a similar practice, namely "newsjacking," has been formalized in practitioner trade publications as a means of using news events to increase awareness of a brand's message.

"Real-time" dynamics are not new to marketing scholars, but the focus on this aspect of marketing activity has been unexplored. For instance, prior research has examined the role that marketing plays in turning "real-time" market data into customer knowledge (Achrol and Kotler, 1999; McKenna, 1995), developing customized offerings (Oliver, Rust, and Varki, 1998) or managing improvisation in the new product development process (Moorman and Miner 1998). However, the literature has yet to focus much attention on the implications of "real-time" behaviors on the management of marketing communications. A recent thematic exploration of the past 15 years of research on digital, social media, and mobile marketing makes no mention of RTM messages (Lamberton and Stephen 2016). Yet, the Marketing Science Institute has listed RTM as one of its top research priorities for the 2016-2018 period. Given its growing importance in practice and the call for research on the theme, the timing is appropriate for an empirical study of RTM messages and their impact on consumer engagement in social media.

Against this backdrop, this research study makes the following contributions. First, I introduce a formal definition and categorization of RTM messages as Planned and Improvised based on the nature of their development. Second, in order to empirically examine the effect of RTM messages on consumer engagement in social media, I built a unique database of 2,575 Facebook messages across 18 brands in the food and beverage industries. I found that when aggregated, RTM messages have no effect on key social media consumer engagement metrics such as likes, shares, and comments in Facebook. However, when disaggregated based on their development method, planned and improvised RTM messages have asymmetric impacts on consumer

engagement. Third, given the novelty of the topic, I integrate insights from practice (using field interviews) and extant theory in advertising cues on content (e.g., MacInnis, Moorman, and Jaworski 1991), context effects (e.g., Fuchs, 1964; Janssens, De Pelsmacker, and Geuens 2012) and improvisation (Moorman and Miner 1998) to propose and test process mechanisms by which RTM messages impact consumer engagement. I find improvisation can lower the design effectiveness of RTM messages by decreasing their comprehension and adversely affecting the message's perceived creativity. Both factors are expected to have an adverse effect on engagement levels. Third, I propose and find evidence for the positive moderating role that targeting and product presence in the social media post has on the relationship between improvised RTM messages and engagement.

The rest of the essay is organized as follows. I first review the prior literature, then present the conceptual model and hypotheses. I then provide a description of the data and measures. Next, I describe the methodological considerations and the results. I conclude with the discussion of the results, the implications for research and practice, limitations of the study, and directions for further research.

2.2 Relevant Literature Review

I first review the research on context effects in advertising from traditional to digital media. It is important to note that both these broad streams center on advertising messaging that is planned well in advance of execution. Also relevant to my study is research on "real-time" activities in marketing, with a primary focus on product development

2.2.1 Context Effects of Advertising Messaging in Traditional Media

Understanding content characteristics in an advertising message that influence consumer responses is a well-researched domain in the literature, particularly among traditional advertising vehicles such as TV or print channels (Batra and Keller 2016). However, beyond content characteristics, the context of a message – when and where it is delivered - should also be considered because the same message in different contexts could lead to different outcomes. For instance, positive evaluations of a TV program increase positive evaluations of ads appearing in the show due to spillover effects (e.g., Khouaja and Bouslama 2011; Murry, Lastovicka, and Singh 1992). Other studies find that an audience's involvement with a program is detrimental to ad recall or evaluations of the ads (e.g., Malthous and Calder 2010; Levy and Nebenzahl, 2006). Research also finds that when a message shares a similar content theme with the medium where it is placed (e.g. fashion TV program and fashion TV commercial) (e.g., Janssens, De Pelsmacker, and Geuens 2012; Fuchs 1964) or induces similar moods to those in the program (e.g., Coulter 1998; Lord, Burnkrant, and Unnava 2001; Kamins, Marks, and Skinner 1991), it enhances positive consumer outcomes such as attitudes, memory, and purchase intention. This stream of research highlights the importance of context as an influential factor in advertising effectiveness and suggests that design and placement of advertising in the right context is an important consideration.

RTM messages can be perceived from a context perspective, where instead of the context congruency occurring mainly between a program and an advertisement, it occurs between a current news event or cultural moment and the message. The review of the advertising context literature in traditional media brings forth two implications. First,

because it was possible for advertising in traditional media to be planned with advance knowledge of the context of an ad's placement, studies of content and context advertising effects in traditional media are primarily focused on planned aspects of messaging and do not consider the potential for improvisation as an aspect of message design. Second, while scholars have found that the context in which an ad is placed has an important role to play in the overall effectiveness of the message, the evidence on the context effect's direction provides limited insight into the likely effect of RTM messaging in social media.

2.2.2 Context Effects of Advertising Messaging in Digital Media

As the rise of digital media has changed consumer behavior during the past decade and thus how brands advertise, marketing researchers have been exploring new marketing dynamics in the digital environment. Research has also begun to identify differences of content characteristics in advertising between traditional and digital media (Batra and Keller 2016; Lamberton and Stephen 2016). For example, a recent study finds that unlike traditional ads, viewers are less engaged with a persuasive tone in social media (Stephen, Sciandra, and Inman, 2015). In addition, immediate use of consumer information in advertising design for each individual is now possible due to digital technology (e.g. Lambrecht and Tucker 2013; Tucker 2014); and studies find this form of contextual advertising increases advertising effectiveness (Zhang and Katona 2012). Moreover, the effects are instantaneous in that consumers respond to advertising within minutes (Joo et al. 2013; Lewis and Reiley 2013; Liaukonyte, Teixeira, and Wilbur 2015) and the effects dissipate within a short time. The above findings suggest that considering context in advertising is even more critical in the digital environment.

Research findings discussed in these two sections share one common characteristic: the messages are designed in a sequential process where the content is first planned, later produced, and finally placed. That is, a message is designed in advance and goes through the steps of collecting feedback and revision before it is finally released to the audience. RTM messages can be planned in advance and placed in close temporal proximity to a context (e.g. a Mother's Day promotion). However, when designing ads that consider the unexpected nature of some moments or event contexts, it is not always possible to plan them in advance. On such occasions, marketers need to develop and release ads quickly without sufficient feedback or approval.

Also, while Planned RTM is not a new activity for managers, Improvised RTM is a very recent possibility enabled by digital technology and social media. The effect of this new dynamic, both in terms of planning and placement, has yet to be empirically investigated in advertising messages.

2.2.3 Consideration of "Real-Time" and Improvisation in the Marketing Literature

The term "real-time" has been examined in relation to other marketing management topics. McKenna, (1995) in a managerial paper, introduced the concept of "real time marketing" in which he discusses the importance of leveraging new technologies to establish real-time communications with customers. Achrol and Kotler (1999) introduce real-time market knowledge and argue for the importance of marketing's role in delivering real -time information to firms. In addition, scholars have discussed real-time factors relative to new product development in organizations (Moorman and Miner 1998). The authors use the term "improvisation" to refer to "the degree to which the composition and execution of an action converge in time" and

suggest that improvisation enhances organizational memory. Similarly, Oliver, Rust, and Varki (1998) examine the effect of improvisation in customized offerings on consumer outcomes. Studies on improvisation for new products are the closest area of work related to my research and where I draw on for my theoretical foundation.

A related concept to RTM messages, Contextual Marketing, has seen some discussion in the digital environment. Kenny and Marshall (2000) describe "contextual marketing as the practice of providing personalized information to customers at the point of need in real time (p.120)". Zhang and Katona (2012) suggest that contextual advertising increases advertiser profit and Luo (2003) argues that contextual marketing in an e-commerce setting increases site value, user satisfaction, and online purchases. However, contextual marketing differs from RTM messaging in that it focuses on providing customized information to customers and is based on customer information that marketers collected prior to message design and delivery. By contrast, RTM messages are not designed based on prior content customers' views and are not customized for individuals. Instead, the message is customized to specific transient contexts.

The aspect that sets RTM messages apart from other branded messages is their target market of unique transient contexts. However, their design and delivery could occur in either the traditional sequential process or in very close proximity to each other, a method which resembles the features of new product improvisation. Therefore, I draw on context effects in traditional/digital media and improvisation research, as well as manager interviews, to inform my predictions described in the next section. Table 2.1 summarizes the literature and provides the positioning of this study. While prior research

has examined planned RTM messages, this is among the first studies to explore both planned and improvised RTM messages in the social media context.

Table 2. 1 Overview of the Literature

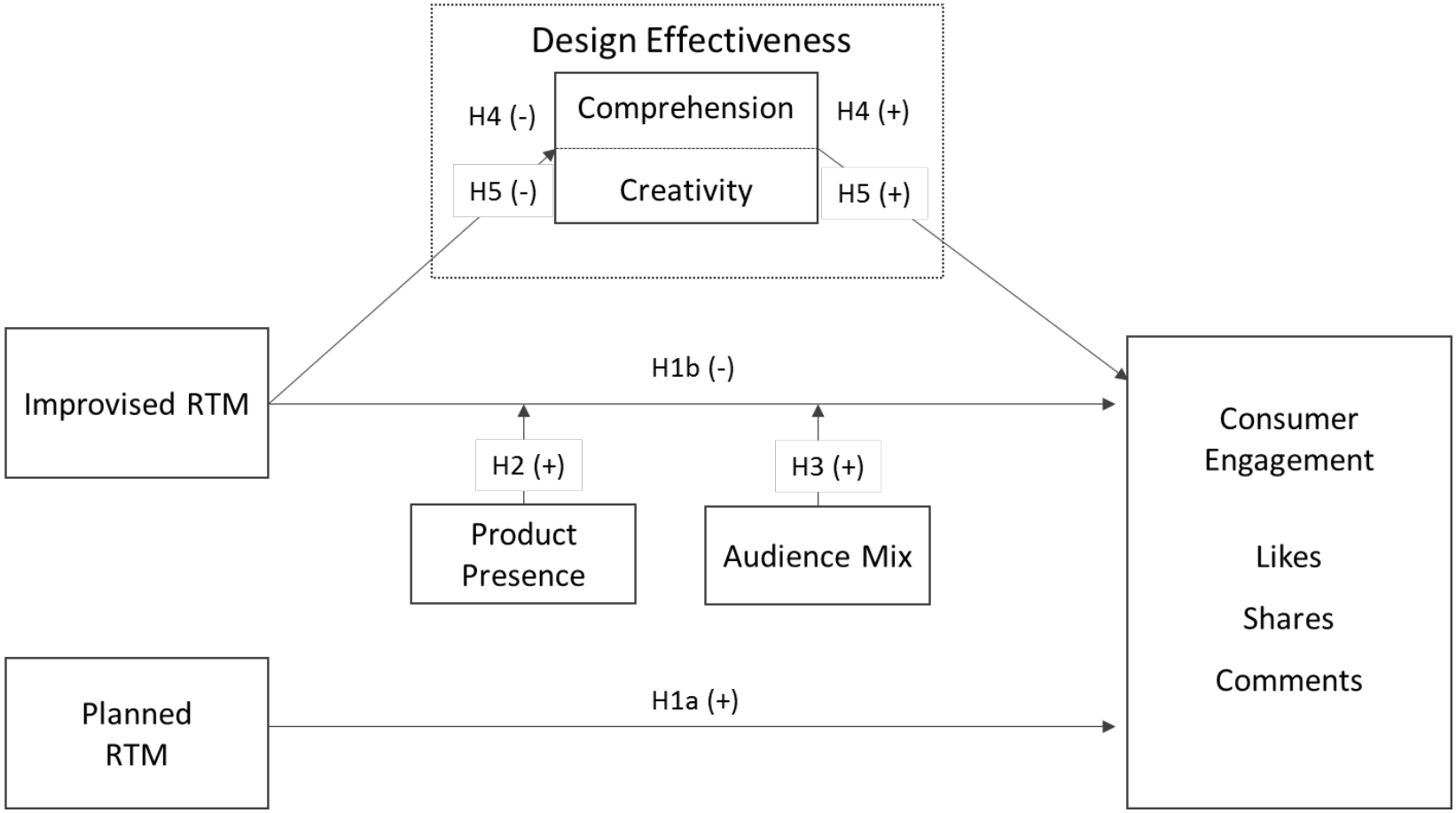
	Traditional Media		Digital Media	
	Context Effect / Planned	**Context Effect / Improvised**	**Context Effect / Planned**	**Context Effect / Improvised**
Khouaja and Bouslama (2011)	Y	N	N	N
Murry, Lastovicka, and Singh (1992)	Y	N	N	N
Malthous and Calder (2010)	Y	N	N	N
Levy and Nebenzahl (2006)	Y	N	N	N
Janssens, De Pelsmacker, and Geuens (2012)	Y	N	N	N
Fuchs (1964)	Y	N	N	N
Coulter (1998)	Y	N	N	N
Lord, Burnkrant, and Unnava (2001)	Y	N	N	N
Kamins, Marks, and Skinner (1991)	Y	N	N	N
Meyers-Levy and Tybout (1997)	Y	N	N	N
Archol and Kotler (1999)	N	Y	N	N
McKenna (1995)	N	Y	N	N
Oliver, Rust, Varki (1998)	N	Y	N	N
Moorman and Miner (1998)	N	Y	N	N
Lambrecht and Tucker (2013)	N	N	Y	N
Tucker (2015)	N	N	Y	N
Joo et al. (2013)	N	N	Y	N
Lewis and Reiley (2013)	N	N	Y	N
Liaukonyte, Teixeira, and Wilbur (2015)	N	N	Y	N
Luo (2003)	N	N	Y	N
Zhang and Katona (2012)	N	N	Y	N
This Study	**N**	**N**	**Y**	**Y**

2.3 Conceptual Model and Hypotheses

Given the relative novelty of the practice of RTM in social media and the paucity of academic research in the domain, I rely on the practitioner publications, semi-structured interviews with managers and extant academic research on advertising to develop my conceptual model. First, practitioner research suggests that alternative types of RTM practices are distinguished by the level of improvisation (e.g., Lieb et al., 2013). I examine two types of RTM messages in this research, namely (a) *Planned RTM messages* - messages created in anticipation of an established event or situation (e.g., a relevant moment of the day or a special event such as the Super Bowl) but deployed at a time when the context is most relevant and (b) *Improvised RTM messages* - messages created and deployed in close temporal proximity to an unpredicted event or situation. Both planned and improvised messages are treated as RTM messages because their content incorporates elements of a transient context and they are placed in close temporal proximity to the situation. Yet I focus on Improvised RTM messages given that they are the truly novel activity for brand marketers. Second, given the relative newness of improvised RTM messages, I conducted semi-structured interviews with managers responsible for developing social media content. Prior award-winning research in marketing has argued for the use of theory-in use interviews in novel domains (Kohli and Jaworski 1990; Bendapudi and Leone 2002; Menon et. al 1999). It also provides the following benefits. First, it provides richer texture to distinguish between the two types of RTM, identify the mechanisms through which RTM impacts consumer engagement and the moderators of its impact, thus developing organic theory (Challagalla et al. 2009; Kohli 2009; Rust 2006). Second, it supplements the theoretical view with managerial

relevance, which is especially valuable given the sparseness of extant literature (Tuli et al. 2007). I conducted semi-structured interviews with managers responsible for developing social media content. I asked them to describe the processes, decision rules, and development time involved in creating IRTM messages. I also visited three different social media listening and content creation centers to observe the dynamics involved in the creation of IRTM messages. Third, I also draw on MacInnis, Moorman, and Jaworski's (1991) theory of consumers' motivation, opportunity, and ability (MOA) to process brand information from ads to predict the effects of RTM messages on consumer engagement in my hypotheses. The conceptual model is also informed by the improvisation literature and context effects studied in the advertising literature. Taking the three sources together, I develop a supply-side perspective of the impact of RTM, its moderators and mediators in explaining consumer engagement in social media. Figure 2.1 presents the conceptual model. I elaborate on the underlying relationships and hypotheses below.

Figure 2. 1 Conceptual Model



2.3.1 Understanding the Effect of RTM Messages on Consumer Engagement

Because the empirical research on improvised RTM messages is still in an early stage, I begin by investigating the direct relationship between Improvised RTM messages and consumer engagement. The growing use of RTM messages and evidence in the extant literature of advertising context effects support an expectation of a positive effect on engagement.

Based on the Motivation, Opportunity, and Ability framework proposed by MacInnis, Moorman, and Jaworski (1991), I predict that PRTM messages could enhance the ability of consumers to process the brand messages due to their congruity with the context. Extant research finds that congruity between an advertisement content and the program theme (e.g., Janssens, De Pelsmacker, and Guenes 2012) or the program mood (e.g., Coulter 1998; Lord, Burnkrant, and Unnava 2001) where the ad appears improves positive consumer responses. Consistent with such findings, I expect that if the content of a PRTM is congruent with its context (i.e., a holiday), it would improve conceptual fluency, thus increasing the positive evaluation of the message (Lee and Labroo 2004). Also, providing a context and access to relevant knowledge structures enhances the ability of viewers to process the message.

However, Improvised RTM messages may be subject to different outcomes due to the dynamic nature of their development. While more and more companies are incorporating IRTM messages into their communication strategies in social media, some practitioners have expressed concern that the practice could be a double-edged sword. On the one hand, successful IRTM messages capture consumers' attention and can generate positive consumer outcomes. On the other hand, IRTM messages could also fail to target

the right audience or select the appropriate topics or moments (e.g., Brito 2014; Davis 2014; Walter 2014) thus lowering the customer's motivation and ability to process the message. Furthermore, such rapid response IRTM communication could also result in the creation of lower quality or less sophisticated content, again reducing the consumer's motivation to engage with the ad message.

Taking both planned and improvised arguments together, I expect no significant effect of RTM messages on engagement in social media. However, when RTM messages are examined separately, I expect Planned RTM (PRTM) messages to lead to greater consumer engagement and in contrast, Improvised RTM (IRTM) messages to lead to lower consumer engagement in social media. Formally,

H1a: Planned RTM messages are associated with greater consumer engagement in social media.

H1b: Improvised RTM messages are associated with lower consumer engagement in social media.

2.3.2 Moderators of the IRTM-Engagement Relationship

When considering possible moderating effects that can improve the performance of IRTM, I focused on factors that could influence the motivation and ability, as they are the main mechanisms that I postulate as negatively impacting engagement towards IRTM. I propose the presence of product information on the message and the accuracy of targeting in the message placement can be factors that enhance consumers' motivation and ability to engage with the IRTM and hence, reduce its' negative effect on engagement.

As argued earlier, motivation and ability to process and engage with the message can be limited if the message is dependent on a context that may not be salient for consumers. In other words, if the message is too focused on the context and not enough on the product, it can lead to difficulty in processing the message, especially if consumers are unaware of the context. However, if the product plays a more visible role in the message, I expect the context dependency would decline and consumers would perceive the message with greater conceptual fluency, enhancing both the motivation and ability to engage with the message, even if consumers are not directly aware of the context (MacInnis, Moorman, and Jaworski 1991). In a similar vein research on ad appeals finds that the prominence of the appeal increases customer attention to and willing and ability to processing the ad more deeply (Gardner 1983) and increases the ad's effectiveness (Chandy et. al 2001). In addition, product information in a message serves as an important ad retrieval cue that increases ad memory and evaluation (Keller 1987). In fact, recent research finds support for the argument that when a brand is integral to a social media message, particularly an emotional one, then the message is perceived as less manipulative, less superfluous, and more persuasive (Akpinar and Berger 2016). Together, the presence of the product enhances conceptual fluency, ad memory, evaluation, and persuasiveness, thus enhancing the customers' motivation and ability to engage with the message. Formally, I expect:

H2: The greater the presence of brand information in the social media message, the lower the negative impact of Improvised RTM messages on consumer engagement.

I propose the effect of Improvised RTM messages on consumer engagement will be asymmetric depending on a post's audience mix. Audience mix has been defined as "the extent to which a post's audience – the consumers who see a post – is comprised of *core fans*" (Stephen, Sciandra, and Inman 2015). Core consumers are more likely to be aware of the brand and context of a post than non-core consumers, who may have been exposed to the post because of a promotion rather than their own interest. In contrast, I expect that core consumers will be more engaged with IRTM messages because they are more likely to be exposed to the post as a consequence of their own interest in the brand and the context. Similar arguments are discussed in the MOA theory (MacInnis, Moorman, and Jaworski 1991) in that ad executional cues that are more relevant or familiar to the viewer increase advertising effectiveness by enhancing motivation to process the ad information. Therefore, the more targeted the IRTM message is towards core consumers, the more likely that IRTM messages could lead to higher consumer engagement. Thus,

H3: The greater the targeting of the Improvised RTM message in social media towards core consumers compared to non-core consumers, the lower the negative impact of Improvised RTM messages on consumer engagement.

2.3.3 Understanding the Effect of Improvised RTM

Given that the novelty in brand communication strategy lies in IRTM messages (compared to PRTM messages), I focused on understanding the possible mediators of IRTM's effect on consumer engagement. Drawing on a combination of managerial interviews, extant research in improvisation, and evidence from the MOA theory

(MacInnis, Moorman, and Jaworski 1991), I follow a supply-side perspective to explain the mechanisms underlying the negative effect of IRTM messages.

Prior research on improvisation's effects on performance suggest the practice is not inherently good or bad (Vera and Crossan 2005.) Improvisation can deliver positive outcomes such as enhanced organizational memory (Moorman and Miner 1998) or product innovation (Kamoche and Cunha 2001). This occurs by enhancing flexibility and adaptability to emerging challenges, both core elements of the innovation process. However, improvisation can negatively affect the success of innovation efforts by reducing the design effectiveness of new products. Specifically, research finds that adopting improvisation practices risks the quality of new product features and their functional performance (Moorman and Miner 1998). The risk is induced by inconsistent and wasteful actions and difficult cross-functional communication due to lack of controls and planning. The risk can be reduced when the environment is unstable and unpredictable, a scenario in which the benefits of controls and planning become less advantageous.

Drawing a parallel to the design effectiveness in Moorman and Miner (1998) to the social media advertising communication context, I equate the quality of product features to the level of message creativity and the functional performance to the level of message comprehension, or the ability of the content creators to clearly communicate the key ideas of the message. Therefore, my expectation is that improvised RTM messages have lower engagement in social media than planned RTM messages due to a decline in design effectiveness of the communication reflected as message creativity and comprehension for the reasons provided below.

Non-RTM messages generally require little contextual or background information for consumers to process and comprehend. In contrast, improvised RTM messages are more context dependent because they relate to special events or moments occurring in a specific period of time. Therefore, consumers need background knowledge of the events or situation used in the content to fully comprehend the message. For example, a consumer is less likely to understand a message posted by a brand about a particular play taking place during a football game if he or she is not watching the game. The literature suggests that contextual relevance initiates engagement and serves as an important driver of involvement and attitude formation in advertising (Wang 2006). However, positive outcomes are possible only when consumers understand the context of the message. If consumers do not have enough information about the moments or events the message is relating to, then message comprehension could be at risk. MacInnis, Moorman, and Jaworski (1991) contend that consumers' ability to process brand information from a message drives communication effectiveness. Difficulty in understanding a message harms engagement by decreasing consumers' ability to process information (Petty and Cacioppo 1979). Also, scholars have found that message comprehension is an important driver of deeper information processing (Ephron 2005; Burnkrant and Sawyer 1983).

The effect could be more detrimental to engagement in an online context given consumer's ability to tune out messages more easily in digital and social channels than in the past (Keller 2009; Petreeca 2006). In an environment of information overload, consumers can become more sensitive to message complexity (Arguello et al. 2006) and more likely to skim over messages in their social media news feeds.

Taken together, these arguments suggest that improvised RTM messages may be more difficult to comprehend because they require additional understanding of a transient context. Consumers that do not understand the context will have more difficulty with message comprehension and are more likely to skip it altogether in a social media setting. Based on the arguments above, I expect the following:

H4: Improvised RTM messages are more difficult to comprehend and therefore lead to lower consumer engagement in social media.

The managers who were interviewed described how the requirement for speed (in order to be temporally proximate with the unexpected moment or event) led them to operate with a reduced message creation protocol where few (one or two) people were involved in the development process. In addition, while traditional advertising messages were vetted through stages of reviews and revisions, IRTM messages were only seen by one person to assess legal risks, not creative quality. For some predetermined message topics, the brand director would have to be involved in the final approval, but for most of the IRTM content created, the material was posted without the traditional vetting and review stages. The site visits provided supporting evidence of this description. Content design, production, and publication teams were located in a large room with close proximity to each other. As a social media listening team identified opportunities for improvisation, the content design and production team would produce posts on site using the available production equipment. Team members then sent the messages to the publishing team for issuance in the appropriate social media site.

I contend the speed and immediacy required to create Improvised RTM messages can risk the design effectiveness of a message, particularly its level of creativity. The literature on creativity finds high time pressure stifles creativity by limiting the extent to which employees engage in exploratory thinking and causing them to rely on familiar algorithms. For example, Andrews and Smith (1996) showed that product managers who experienced high time pressure developed marketing programs low in creativity. The potential decline in creativity can be detrimental to consumer engagement in social media because it can reduce the motivation to process the message. For instance, MacInnis, Moorman, and Jaworski (1991) argue that use of novel stimuli enhances motivation to attend the ad and thereby increases communication effectiveness. I expect these research findings to also apply to IRTM messages, especially as the limited time and rapid protocols observed in my interviews and site visits could reduce content creativity.

Therefore, I expect that IRTM messages are likely to be associated with lower levels of creativity which would negatively impact consumer engagement in social media. Formally:

H5: Improvised RTM messages have lower levels of creativity, and therefore lead to lower consumer engagement in social media.

2.4 Data and Measures

The database used to test my hypotheses consists of 2,575 Facebook messages posted by 18 consumer product brands during the January – September 2015 period and collected in partnership with a social media agency.

Dependent variable. I measure consumer engagement in social media through the aggregate number of "likes", "shares" and "comments" received by a brand post on Facebook. Research to date conceptualizes consumer engagement as a consumer response phenomenon distinct from customer satisfaction and defined as a personal and motivational state arising out of an aggregation of consumer experiences with product stimuli. (Calder, Isaac, and Malthouse, 2015). Scholars have also described consumer engagement as supportive behaviors for a product or service that extend beyond customer-firm purchase transactions and become a means of enhancing customers' interaction and participation (Kumar, Novak, and Tomkins 2010). These behaviors include making recommendations via word-of-mouth, blogging, review writing, helping other customers, and participating in customer or brand communities (Van Doorn et al. 2010). While these definitions largely reflect behaviors in traditional media, scholars have created parallel proxies for social media environments consisting of attitudinal (e.g., liking a post on Facebook) and behavioral measures (e.g., sharing or commenting on a Facebook post with friends) (Berger 2014; Pansari and Kumar 2016; Lee, Hosanagar, and Nair 2017; Porter and Golan 2006; Stephen, Sciandra, and Inman 2015). I adopt this approach for my study.

The data consists of the aggregate post level Likes, Shares, and Comments at least 4 weeks after each message's publication. I take this step as it increases the likelihood of capturing the total amount of engagement achieved by the posts. Lee, Hosanagar, and Nair (2017) find that after fifteen days, virtually 99% of all engagement is accounted for. This is because brands typically do not remove posts and hence the Facebook algorithm more heavily weights posts less than a month old, which significantly lowers the likelihood of consumers seeing older posts (Stephen, Sciandra, and Inman 2015).

Independent variables. RTM can be studied from either a supply or demand side perspective. Due to the novelty of the phenomena, I chose to focus on the supply-side question of how improvised messages impact consumer engagement. However, this perspective makes the identification of RTM messages in social media particularly challenging due to the difficulty in distinguishing between Planned and Improvised content. For example, Coca-Cola used a television commercial in Brazil in support of the national football team after their elimination from the 2014 Football World Cup. While to observers the message appears to have been created within days of the loss to Germany in the tournament semi-finals, the commercial was in fact created months in advance as a contingency in case the national team did not win. From a supply-side point of view, this message was planned, not improvised. Given that this distinction can only be accurately established by observing the content development process, I partnered with a social media agency that manages and creates content for the 18 brands in the study. The agency is structured around work teams that manage all social media content creation for specific brands and therefore had the information about the message creation process. The work teams were trained in coding by the agency's managing director according to the guidelines of a tagging instruction guide. Each team was then assigned the Facebook messages from January to September 2015 for the brands they managed and asked to tag each message on three dimensions. A message was tagged as Improvised RTM if it was created and posted quickly in reaction to an unanticipated current event or situation. Planned RTM messages were tagged as such if they were created in advance and as part of a plan to relate the brand to a holiday or event that could be anticipated by the team. (e.g. Mother's Day, Music Concert, Opening Ceremony of the Olympics, etc.). For example, Oreo's message in

response to the electrical power outage malfunction during Super Bowl XLVII would have been tagged as improvised. In contrast, messages posted immediately after the end of the game to celebrate the victory of the Baltimore Ravens were developed well in advance of the game as brands prepared for different outcome scenarios and hence would be tagged as Planned RTM. A total of 69 agency managers participated in the process to categorize the type of RTM message in binary terms.

Mediator and moderator variables. To measure design effectiveness, I drew on the two-part description provided by Moorman and Miner (1998) which included the quality and performance of product features. Given that in the social media context the product is a message, I define the quality of product features in terms of the level of message creativity and the functional performance in terms of the level of message comprehension. I based my measure of creativity on the work by Smith et al. (2007), where researchers established the five dimensions of creativity as Originality, Flexibility, Synthesis, Elaboration, and Artistic Value. Two of the dimensions, Flexibility and Synthesis, are more applicable for video based advertising content (e.g .TV commercials), and judged as less relevant for the type of brand message in my study which is primarily composed of texts and images posted on Facebook. As a result, I focused on the remaining three dimensions of Originality, Elaboration, and Artistic Value to create my measure of creativity. I used an established scale (e.g., Stephen, Sciandra, and Inman 2015; De Pelsmacker, Geuens, and Anckaert 2002) to evaluate message comprehension to measure the functional performance of each post.

I created reduced set of items of Originality, Elaboration, and Artistic Value and measured them using consumer-based tagging via an online panel. I exposed each

consumer to three posts in the study and asked them to answer the item related questions identified on Table 2.2 using a five-point Likert scale. I then averaged the responses across the three dimensions to create a composite measure of creativity. Message comprehension was measured with a similar method Finally, the agency team measured product information based on the presence of product symbols or information about product usage in the content of the post. The specific items used for the consumer-based tagging of messages can be found in Table 2.2.

Table 2. 2 Variables, Measures, and Descriptive Statistics

Variable	Tagging Method	Description	Mean	SD
Likes	Agency	The number of likes the post received	2698.24	16108.41
Shares	Agency	The number of shares the post received	124.60	783.78
Comments	Agency	The number of comments the post received	115.62	760.04
Planned RTM	Agency	0=No/1=The message is associated to a special day that was planned in advance	0.08	0.27
	Agency	0=No/1=The message is associated to a sport, artistic or music event that was planned in advance		
Improvised RTM	Agency	0=No/1=The message was created in a short time for an event which could not be anticipated.	0.06	0.24
Comprehension	Consumer	I understood the message very well (1=SD / 5=SA)	4.24	0.60
(α=0.93)	Consumer	The message was very clear (1=SD / 5=SA)		
	Consumer	The message being conveyed is easy to grasp (1=SD / 5=SA)		
Creativity	Consumer	The message is good at making me think (1=SD / 5=SA)	3.66	0.55
(α=0.80)	Consumer	The message is sophisticated (1=SD / 5=SA)		
	Consumer	The message is original (1=SD / 5=SA)		
	Consumer	The message is beautifully designed (1=SD / 5=SA)		
Product Presence	Agency	0=No/1=The post includes an image, video, or mention about the product sold by the brand.	0.17	0.22
		0=No/1=The post includes an image of the product package.		
		0=No/1=The post includes an image or video of a person using the product.		
Audience Mix	Automatic	1 - Paid reach/ Total Reach	0.93	0.24
NegativeEmotion	Agency	Number of emotions included in the message among anger/fear/sadness	0.06	0.27
Positive Emotion	Agency	Number of emotions included in the message among happiness/love/humor	0.60	0.65
Brand Fit	Consumer	There is a close fit between message and the brand (1=SD / 5=SA)	3.79	0.68
		The message and the brand have many similarities (1=SD / 5=SA)		
		The message makes sense for the brand (1=SD / 5=SA)		
Link to Campaign	Agency	0=No/1=The post has an advertising tone	0.42	0.49
Value Message	Agency	0=No/1=Post mentions a contest or promotion where the consumer can participate	0.02	0.13
		0=No/1=The post is about the price of the product.		
URL	Automatic	0=No URL in message /1= URL in message	0.06	0.24
Hashtag	Automatic	0=No hashtag in message /1= hashtag in message	0.26	0.44
Uses Photo	Agency	0=No photo /1= photo	0.87	0.34
Uses Animals	Agency	0=No /1= animals in message	0.05	0.21
Length	Automatic	Number of characters in message	57.27	53.56
Social Cause	Agency	0=No/1=The post mentions support by the brand towards a social cause	0.01	0.10
Uses a Celebrity	Agency	0=No celebrity in message /1= celebrity in message	0.08	0.28
Action Call: Get	Agency	0=No/1=Includes an invitation to consumers to view a video, visit a website, or read more.	0.04	0.13
Action Call:Give	Agency	0=No/1=Includes an invitation to consumers to share, comment on, respond to a question.	0.08	0.23

Audience mix. Following Stephen, Sciandra, and Inman (2015), I define audience mix as organic reach / total reach for each post. They point out that consumers reach posts either due to their own interest (organic reach) or because the brands paid a premium to increase exposure (paid reach). Total reach refers to the total number of people reached by a post (organic reach + paid reach). Therefore, an audience mix close to zero indicates greater paid reach, reflecting that a post's audience is composed primarily of non-core consumers. Audience mix close to 1 indicates greater organic reach and hence, a greater representation of core consumers in the total post audience.

Controls. Finally, scholars have also made significant progress in identifying content characteristics that influence consumer engagement with social media messages. I followed coding descriptions developed in Lee, Hosanagar, and Nair (2017) and Stephen, Sciandra, and Inman (2015) to identify control variables for the study. Variables were tagged using three different methods: (a) using text analysis, (b) by the agency managers, and (c) consumers via online panel to tag variables that required a user perspective. A summary of the variables and tagging method is reported in Table 2.2.

2.4.1 Analysis Consideration and Approach

To test the hypotheses of the study, I addressed the following considerations that emerged due to the nature of the data and the data generation process. First, because of my focus on real-time posts, I addressed the possibility that a firm's decision to use such a message was a strategic choice and therefore ignoring this decision could bias the results. Consequently, I employed a first stage Heckman selection model with messages coded as real-time taking the value 1 and non-real-time messages coded as 0. I then

estimated a maximum likelihood probit model with brand size, month, and product category fixed effect as predictors of real-time marketing activities. From this analysis, my research included the inverse mills ratio (IMR) as an additional variable in the subsequent analysis to account for potential selection related endogeneity of the message's use of a real-time strategy in the consumer engagement model.

Second, the dependent variable of my study is the total number of likes, shares, and comments received by a post. I applied a logarithmic transformation of the dependent variables (i.e., log(y+1)) prior to using them in the analysis as done in recent studies of similar measures (Lee, Hosanagar, and Nair 2017; Stephen, Sciandra, and Inman 2015). As reported in the robustness analysis, I also used a negative binomial regression approach and the results were similar.

Third, I included brand fixed effects to account for differences in the size of the social media network for each brand as well as to capture the brand specific social media capabilities. The capabilities are inherently unobserved and could serve as omitted variables, the exclusion of which could bias the main model estimates (Wooldridge 2010).

Fourth, I addressed the likelihood that the content design factors of the real-time messages were endogenous decisions. While I had taken steps to address possible issues around the strategic choice of using real-time messages with a selection correction model and included brand specific effects to proxy latent marketing capabilities, other unobserved factors could have influenced the content design choice. For instance, the presence of product information is likely to be strategic in nature and not completely exogenous. To address this source of endogeneity, I utilize a control function approach

(Danaher et al. 2015; Petrin and Train 2010). I believe that this was an appropriate method to address the potential for endogeneity for the following two reasons. First, the lagged content variables serve as instruments because, while they influence current content decisions, they are unlikely to influence the current engagement outcomes (Stephen, Sciandra, and Inman, 2015). Second, the control function also helps partition each content decision variable into endogenous and exogenous components (Danaher et al. 2015). The inclusion of the probit residuals as additional controls in the main social media engagement model substantially reduces endogeneity and outperforms predicted values from a 2SLS equation (Terza, Basu, and Rathouz 2008). Finally, because the attitudinal and behavioral dependent variables are likely to be correlated, the consumer engagement model was estimated jointly with a system-of-equations tobit model as follows:

$$(1)\ \text{Log (Likes +1)}_{ij} = \alpha_0 + \beta_1 X_{ij} + \beta_2 \text{Controls}_{ij} + \beta_3 \text{Brand Fixed Effects}_i + \beta_4 \psi_{h,ij} + \beta_5 \text{Inverse Mills Ratio}_{ij} + e_{ij}$$

$$(2)\ \text{Log (Shares+1)}_{ij} = \gamma_0 + \gamma_1 X_{ij} + \gamma_2 \text{Controls}_{ij} + \gamma_3 \text{Brand Fixed Effects}_i + \gamma_4 \psi_{h,ij} + \gamma_5 \text{Inverse Mills Ratio}_{ij} + e_{ij}$$

$$(3)\ \text{Log (Comments+1)}_{ij} = \delta_0 + \delta_1 X_{ij} + \delta_2 \text{Controls}_{ij} + \delta_3 \text{Brand Fixed Effects}_i + \delta_4 \psi_{h,ij} + \delta_5 \text{Inverse Mills Ratio}_{ij} + e_{ij}$$

Whereas, X_{ij} represents a vector of Planned and Improvised RTM variables; Controls_{ij} represents a vector of content variables used as controls; $\text{Brand Fixed Effects}_i$ represents a vector of brand fixed effects; $\psi_{h,ij}$ represents a vector of control function residuals, and $\text{Inverse Mills Ratio}_{ij}$ represents the inverse Mills ratio calculated from the Heckman sample selection model. Finally, as a robustness check, I also conducted separate

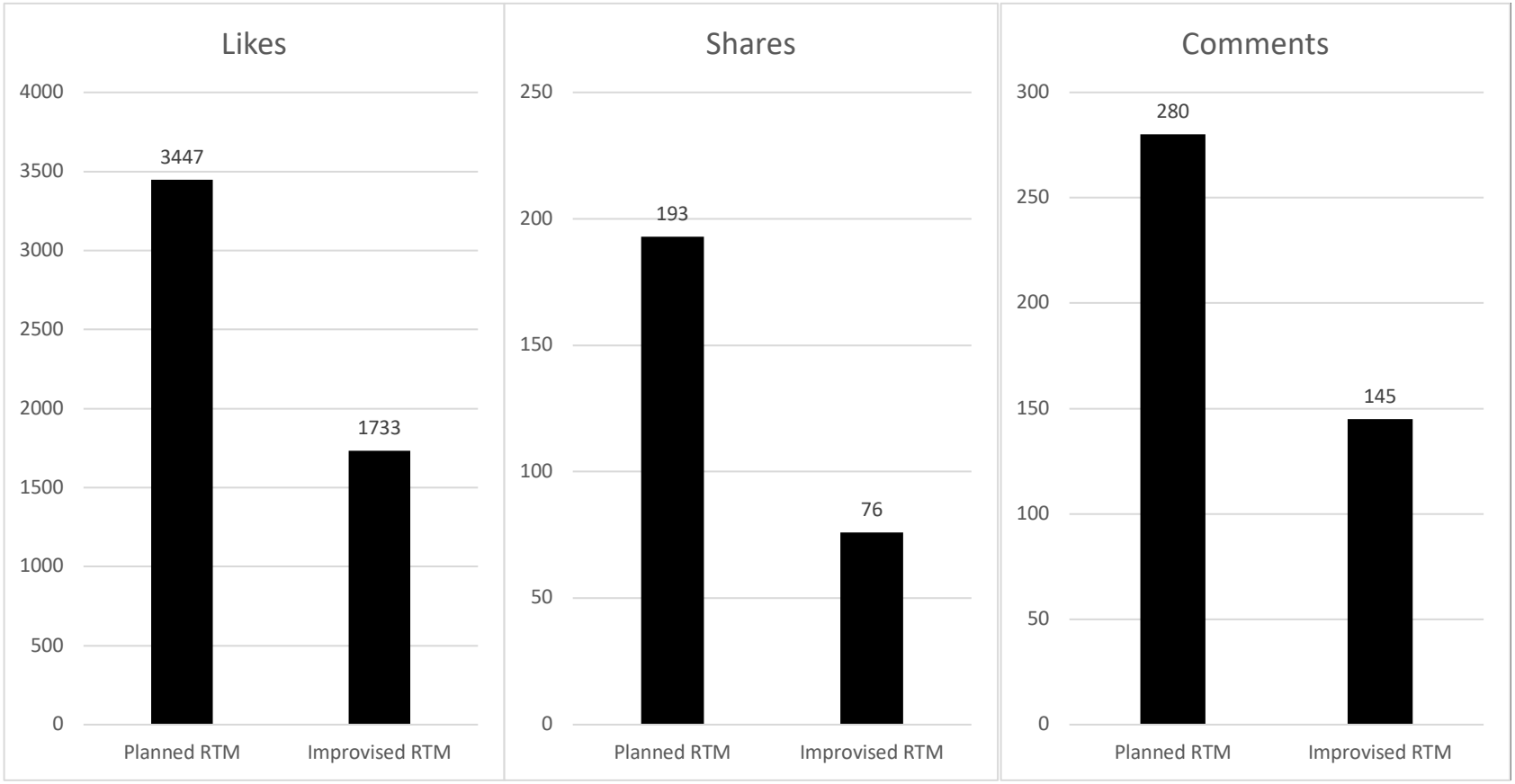
analysis for each dependent variable using a negative binomial model as an alternative way of accounting for the over-dispersion in the data.

Results

My main effect results show that total RTM messages have no statistically significant effect on Likes and Shares, and have a negative effect on Comments (Table 2.3).

I proposed that RTM messages can be categorized as either planned or improvised. I draw on contextual congruency theory to predict that Planned RTM messages would experience a positive effect on consumer engagement and Improvised RTM messages would experience a negative effect. The descriptive details in Figure 2.2 provide model free evidence of the relationship between Planned RTM messages, Improvised RTM messages and engagement. As illustrated by the graphs, average engagement across Likes, Shares, and Comments is consistently lower for Improvised RTM.

Figure 2. 2 Model Free Evidence for the Relationship of RTM Message Type and Consumer Engagement



The results from the model testing the main effects of the two RTM message types on Likes in Facebook are reported in Table 2.4.

Consistent with H1a, I find Planned RTM has a positive and significant effect on Likes. However, planned RTM does not have a significant effect on the behavioral measures of engagement such as Shares and Comments. My study focuses on examining the relationship between Improvised RTM messages and consumer engagement. I find a negative effect for IRTM across the three engagement metrics (Likes, Shares, and Comments) in line with H1b. My findings suggest that IRTM messages can become a potential liability (compared to RTM and especially Planned RTM messages) to a brand's efforts to increase engagement in social media. This finding is important considering the attention the business press gives to IRTM message activities by brands. While it is true that a number of brands such as Oreo and Samsung have been able to capture the attention of consumers using IRTM message strategies, such strategies might have an unintended adverse effect on consumer engagement in its current form.

I had proposed two moderating effects on the relationship between IRTM messages and engagement. The results on Table 2.5 provide evidence for both hypotheses. Both the presence of product (H2) and focused (rather than broad) audience (H3) and in the Facebook post mitigates the negative impact of IRTM message on engagement. The results suggest that as the audience mix focuses on core followers, the negative effect of RTM on engagement is mitigated on "Shares" and "Comments". The effect on "Likes" is fully reversed, turning IRTM messages into a driver of consumer engagement. In addition, the data suggests that the presence of the product in the

message helps IRTM messages increase “Likes” and “Shares,” while mitigating the negative effect on “Comments.”.

Finally, to test H4and H5, I conducted a mediation analysis where I tested comprehension and creativity simultaneously in a structural equation model that included Likes, Shares, and Comments as dependent variables. The reported results of my mediation analysis on Table 2.6 provides evidence supporting my explanation that the improvisation process can lead to declines in both mediators – comprehension and creativity – and thereby decrease all three engagement measures.

Table 2. 3 Main Effects Model - Total RTM

	Log (Likes+1)			Log (Shares+1)			Log(Comments+1)		
	Coeff	SE		Coeff	SE		Coeff	SE	
Total RTM	-0.02	0.05		-0.08	0.07		-0.14	0.08	*
Audience Mix	-3.80	0.13	***	-2.91	0.13	***	-3.32	0.14	***
Lag of DV	0.09	0.02	***	0.08	0.02	***	0.06	0.02	**
Negative Emotion	-0.10	0.10		0.10	0.10		0.05	0.11	
Positive Emotion	0.05	0.03		0.12	0.04	**	0.11	0.05	**
Brand Fit	0.08	0.04	**	-0.01	0.04		-0.02	0.05	
Link to Campaign	0.13	0.05	**	0.03	0.06		0.02	0.08	
Value Message	-0.21	0.22		-0.08	0.25		-0.54	0.32	*
URL	0.05	0.12		-0.09	0.14		-0.30	0.17	*
Hashtag	-0.10	0.05	*	-0.01	0.06		-0.06	0.08	
Use of Photo	0.50	0.10	***	0.11	0.11		-0.12	0.13	
Use of Animals	0.26	0.13	**	0.43	0.14	**	0.35	0.16	**
Length	-0.00	0.00	**	-0.00	0.00	**	0.00	0.00	
Social Cause	-0.08	0.19		0.05	0.28		-0.64	0.30	**
Uses a Celebrity	0.12	0.10		0.04	0.12		0.17	0.15	
Call to Action: Get	-0.17	0.18		0.07	0.23		0.03	0.27	
Call to Action: Give	0.21	0.10	**	0.22	0.13	*	1.12	0.16	***
Constant	8.59	1.24	***	7.43	1.57	***	6.02	1.97	**
Residuals (Total RTM)	0.06	0.23		-0.22	0.26		0.16	0.33	
Residuals (Audience Mix)	0.42	0.13	**	0.26	0.14	*	0.31	0.15	**
Inverse Mills	-0.50	0.43		-1.27	0.58	**	-0.54	0.74	

****p<0.001; **p<0.05; *p<0.10* (Two Tailed Tests)

Table 2. 4 Main Effects Model – Planned/ Improvised RTM

	Log (Likes+1)			Log (Shares+1)			Log(Comments+1)		
	Coeff	SE		Coeff	SE		Coeff	SE	
Planned RTM	0.12	0.06	**	0.08	0.08		0.11	0.09	
Improvised RTM	-0.23	0.07	**	-0.34	0.09	***	-0.52	0.12	***
Audience Mix	-3.87	0.12	***	-2.95	0.13	***	-3.33	0.14	***
Lag of DV	0.09	0.02	***	0.09	0.02	***	0.06	0.02	**
Negative Emotion	-0.10	0.09		0.09	0.09		0.09	0.11	
Positive Emotion	0.04	0.03		0.10	0.04	**	0.09	0.05	*
Brand Fit	0.09	0.04	**	-0.01	0.04		-0.02	0.05	
Link to Campaign	0.10	0.05	**	0.01	0.06		-0.03	0.08	
Value Message	-0.17	0.20		-0.17	0.25		-0.63	0.33	*
URL	0.03	0.11		-0.16	0.13		-0.33	0.16	**
Hashtag	-0.13	0.05	**	-0.04	0.07		-0.12	0.08	
Use of Photo	0.49	0.10	***	0.08	0.11		-0.15	0.14	
Use of Animals	0.17	0.13		0.31	0.15	**	0.22	0.16	
Length	-0.00	0.00	***	0.00	0.00	**	0.00	0.00	
Social Cause	-0.05	0.18		0.11	0.28		-0.54	0.31	*
Uses a Celebrity	0.16	0.09	*	0.08	0.12		0.24	0.15	*
Call to Action: Get	-0.16	0.15		0.19	0.21		0.12	0.26	
Call to Action: Give	0.21	0.10	**	0.15	0.13		1.10	0.16	***
Constant	7.98	1.18	***	6.54	1.53	***	4.88	1.98	**
Residuals (Planned RTM)	0.60	0.37		0.56	0.44		0.96	0.48	**
Residuals (Improvised RTM)	0.01	0.19		-0.21	0.25		0.12	0.31	
Residuals (Audience Mix)	0.51	0.12	***	0.39	0.13	**	0.40	0.15	**
Inverse Mills	-0.38	0.43		-1.08	0.58	*	-0.23	0.75	

****p<0.001; **p<0.05; *p<0.10* (Two Tailed Tests)

Table 2. 5 Moderation Analysis Results

	Log (Likes+1)			Log (Shares+1)			Log(Comments+1)		
	Coeff	SE		Coeff	SE		Coeff	SE	
Planned RTM	0.11	0.06	*	0.08	0.08		0.10	0.09	
Improvised RTM	-0.24	0.07	**	-0.36	0.09	***	-0.54	0.12	***
Product Presence	-0.27	0.08	**	-0.43	0.11	***	-0.03	0.14	
Audience Mix	-3.96	0.13	***	-2.99	0.14	***	-3.35	0.14	***
Improvised RTM x Product Presence	0.87	0.21	***	1.09	0.32	**	0.49	0.42	
Improvised RTM x Audience Mix	0.73	0.31	**	0.29	0.38		0.17	0.47	
Lag of DV	0.09	0.02	***	0.08	0.02	***	0.06	0.02	**
Negative Emotion	-0.14	0.09		0.05	0.09		0.07	0.11	
Positive Emotion	0.03	0.03		0.09	0.04	**	0.08	0.05	
Brand Fit	0.10	0.04	**	0.02	0.04		-0.02	0.05	
Link to Campaign	0.10	0.05	**	0.02	0.06		-0.03	0.08	
Value Message	-0.25	0.20		-0.26	0.25		-0.68	0.33	**
URL	0.04	0.11		-0.15	0.13		-0.33	0.16	**
Hashtag	-0.12	0.05	**	-0.03	0.06		-0.11	0.08	
Use of Photo	0.45	0.10	***	0.03	0.11		-0.16	0.14	
Use of Animals	0.15	0.13		0.29	0.15	**	0.21	0.16	
Length	0.00	0.00	***	0.00	0.00	**	0.00	0.00	
Social Cause	-0.20	0.18		-0.06	0.28		-0.63	0.30	**
Uses a Celebrity	0.19	0.09	**	0.09	0.12		0.25	0.15	*
Call to Action: Get	-0.18	0.15		0.19	0.21		0.11	0.26	
Call to Action: Give	0.21	0.10	**	0.14	0.13		1.11	0.16	***
Constant	4.05	1.17	**	3.59	1.53	**	1.50	1.98	
Residuals (Planned RTM)	0.64	0.37	*	0.57	0.44		1.00	0.48	**
Residuals (Improvised RTM)	-0.06	0.19		-0.27	0.25		0.11	0.31	
Residuals (Audience Mix)	0.53	0.12	***	0.42	0.13	**	0.41	0.15	**
Inverse Mills	-0.27	0.43		-1.04	0.58	*	-0.13	0.75	

****p<0.001; **p<0.05; *p<0.10* (Two Tailed Tests)

Table 2. 6 Mediation Analysis Results

	Log (Likes+1)		Log (Shares+1)		Log(Comments+1)	
	Coeff	(SE)	Coeff	(SE)	Coeff	(SE)
IRTM --> Comprehension						
Improvised RTM ---> Comprehension	-0.15	(0.05)**	-0.15	(0.05)**	-0.15	(0.05)**
Comprehension --> Engagement						
Comprehension ---> Engagement	0.14	(0.04)***	0.20	(0.04)***	0.13	(0.07)**
IRTM --> Creativity						
Improvised RTM ---> Creativity	-0.05	(0.03)**	-0.05	(0.03)**	-0.05	(0.03)**
Creativity --> Engagement						
Creativity ---> Engagement	0.12	(0.03)***	0.21	(0.04)***	0.08	(0.04)**

****p<0.001; **p<0.05; *p<0.10 (Two Tailed Tests)*
Control variables are not reported in the table but included in the analysis.

Robustness Checks

The consumer engagement measures have higher variance than mean, ie., are over-dispersed. To account for over-dispersion and the potential for a significant number of posts receiving low or zero number of likes, shares, or comments, I also examined negative binomial or zero-inflated negative binomial regression models as options for my analysis. Results from the Vuong test suggests that it is appropriate to use a zero-inflated negative binomial for "Likes" and "Shares" (Likes: $p=0.01$; Shares: $p < 0.001$) and a negative binomial for "Comments". The results from this analysis were consistent increasing confidence in the results.

To account for potential outliers driving the results, I winsorized the data at 1% and 5% levels and reanalyzed the models. The results remained robust to this methodological test.

It is likely that the engagement with RTM posts may be influenced by the day of the week and the time of the day of the post. I included these variables as additional controls and my results stayed consistent. I present the results of these robustness checks in Table 2.7.

Table 2. 7 Robustness Check Results – Moderation Effects

	Negative Binomial			Winsorized at 1%			Winsorized at 5%		
	1*	2*	3*	1*	2*	3*	1*	2*	3*
Main Effect									
Planned RTM	0.17[b]	0.15[c]	0.10	0.11[c]	0.09	0.11	0.09[c]	0.11	0.12
Improvised RTM	-0.28[a]	-0.43[a]	-0.61[a]	-0.23[b]	-0.34[a]	-0.53[a]	-0.21[b]	-0.32[a]	-0.49[a]
Product Presence	-0.48[a]	-0.54[a]	-0.35[c]	-0.26[b]	-0.42[a]	-0.03	-0.20[b]	-0.38[a]	0.00
Audience Mix	-4.64[a]	-3.89[a]	-4.23[a]	-3.89[a]	-2.91[a]	-3.30[a]	-3.21[a]	-2.43[a]	-2.91[a]
Improvised RTM x Product Presence	0.75[b]	0.95[b]	0.90[c]	0.86[a]	1.09[b]	0.42	0.78[a]	1.01[b]	0.25
Interaction Effects									
Improvised RTM x Audience Mix	0.78[b]	0.49	-0.04	0.71[b]	0.23	0.26	0.42[c]	0.20[a]	0.26
Control Variables									
Lag of DV Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Day of the Week and Time of the Day Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intercept Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Residuals									
(Planned and Improvised RTM Included)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
(Audience Mix included)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Inverse Mills Included	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

NB=Zero Inflated Negative Binomial; 1: log(Likes+1), 2*: log(Shares+1), 3*: log(Comments+1)*
a: p<0.001; b: p<0.05; c: <0.10(Two tailed test)

2.5 Discussion

Marketing managers and agencies alike have directed significant attention to real-time messages as one of the defining practices of the social media era. While it is not a new idea, it is a marketing action made more commonplace by the advent of digital communication channels and the decrease in cost and time required to create and distribute branded messages. In fact, RTM messaging activity has been on the rise and many companies have invested in capabilities to execute real-time communication strategies. For instance, both Adidas and Coca-Cola created RTM centers to help them listen, develop, and deploy messages during the 2014 FIFA World Cup that respond to the results of the tournament and consumers' experiences during the month long event. It is then reasonable to expect that managers are increasing the practice of RTM because they are seeing positive results. It is also possible that companies do not make the decision to introduce RTM messages based on performance outcomes but are instead responding to competitive pressures or emulating trends which have yet to be fully tested. For instance, firms may be mimetic (Haveman 1993) in part due to a general belief that RTM messages are beneficial to their engagement goals. The limited empirical studies on the subject make it difficult to assess if and how this growing practice benefits brand development efforts.

I take a supply-side perspective to study two types of RTM messages based on their development process, namely Planned and Improvised RTM messages. Drawing on the managerial interviews and the extant literature on improvisation, contextual congruency, and the MOA theory, I argue that RTM messages can be both an asset and a potential liability to a brand's engagement efforts in social media. While, when

aggregated RTM messages have no effect on consumer engagement, the use of Improvised RTM messages has a negative and significant effect across all three measures of consumer engagement used in the study. This result is both important and surprising considering the amount of attention that the RTM practices have received in the press and the investments made by companies to develop improvisation capabilities in social media.

I find only partial support for my hypothesis that planned RTM (in contrast to improvised RTM) would positively affect all three metrics of consumer engagement in social media. This result is consistent with predictions from contextual congruency theory that the benefit of content-context fit is primarily evident in improvements on attitudes towards a message (Moore, Stammerjohan, and Coulter 2005) and the motivation and ability to process the message (MacInnis, Moorman, and Jaworski 1991). While the choice by consumers to "Like" a post on Facebook can be viewed as an indicator of attitudes towards a message, Shares and Comments are considered behavioral indications of engagement and are possibly less impacted by contextual congruency effects.

My study also presents two moderators that can help reverse the negative effect of Improvised RTM on consumer engagement. First, I contend and find evidence to support a relationship between targeting and IRTM, mainly that the more targeted the message, the greater the impact of IRTM on engagement. It is likely that non-core consumers are exposed to the post because of brand promotion as opposed to their own interest. As stated earlier, the MOA theory (MacInnis, Moorman, and Jaworski 1991; Chandy et. al 2001) suggests that ad executional cues that are more relevant or familiar to the viewer

increase advertising effectiveness by enhancing motivation and ability to process the ad information. Therefore, the more targeted the IRTM message is towards core consumers, the more likely that IRTM messages could lead to higher consumer engagement.

In addition, I find that the presence of product information in the message can also help moderate the effect of Improvised RTM on engagement. I attribute this effect to an enhanced ability by consumers to process the message. In other words, if the product plays a more visible role in the message, I expect the context dependency would decline and consumers would perceive the message with greater conceptual fluency, thus enhancing both the motivation and ability to engage with the message, even if consumers are not directly aware of the context (MacInnis, Moorman, and Jaworski 1991). Moreover, the product presence may act similar to appeal prominence in advertising (Gardner 1983; Chandy et. al 2001) and enhance consumers' motivation to pay attention to and process it more deeply thus enhancing engagement.

Interviews with social media managers responsible for creating RTM communication, along with a review of the improvisation literature, helped identify two factors to explain the negative effect of Improvised RTM messages. I draw on the prior literature on improvisation in new product development (Moorman and Miner 1998) to propose that the rapid development required for improvised messages could lead to lower levels of design effectiveness. I adapt the definition of design effectiveness into a social media context by describing it as a combination of creativity and comprehension.

I propose that the high level of context dependency would, on average, make Improvised RTM messages harder to comprehend. This is because improvised messages are often in response to an event that is not equally known to the full network of

consumers in social media. As a result, the message may offer limited comprehension and engagement to consumers who are unfamiliar with the context.

In addition, I argue that the short development times available for creating an improvised message in real-time can limit the ability to develop content with higher creativity levels. Managers described how the Improvised RTM messages were often created by a single person, were not required to be evaluated through the regular content development processes to save time, and only required approval of a few people before publishing. In addition, the nature of the approval was often based on legal considerations rather than creative considerations. As a result, while the processes provided speed and agility, they did not provide the opportunity for the creative tension between advertising managers that can contribute to higher design effectiveness.

2.5.1 Research and Managerial Implications

These findings offer an important contribution to the growing body of research being created on content characteristics in social media by providing an early empirical exploration into the recent practice of RTM messages in social media. My proposition of two forms of RTM messages, namely Planned vs. Improvised RTM messages, provides a new research dimension for the study of social media messages. In addition, by adopting a supply side perspective in the study of IRTM and social media content in general, I promote a different research avenue than the more prevalent focus on consumer-side content characteristics.

My research focuses on content strategies and characteristics that are well within the control of managers and provide insights into actions they can take to improve the performance of an RTM communication strategy. In particular, it provokes managers to

consider the creation of Improvised RTM programs as an emerging form of capability, i.e., *agile marketing capability* that requires new processes and methods to mitigate the risks associated with design effectiveness and message understanding inherent in a more rapid and dynamic creative process. In fact, the capabilities required to generate effective IRTM messages may need to resemble those of Improv artists rather than traditional advertising managers. For instance, my study points to the possibility that to engage in real-time, companies may need to rely more on content assembly of planned elements to match a message to a context, rather than complete improvisation and real-time creation.

Moorman and Miner (1998) argue that an organization's tendency to improvise is influenced by technological change in the environment. In line with this claim, the technological change motivating the growth of social and digital media encourages the practice of RTM messaging. Yet, it is relatively new form of brand communication. Researchers on improvisation have identified various factors that moderate the relation between improvisation and performance such as training (Vera and Crossan 2005), procedures and systems (Moorman and Miner 1998), communication within teams (Brown and Eisenhardt 1998), or organizational culture (Crossan et al 2005). Furthermore, the positive effects of improvisation are evident only after organizations or teams have accumulated experience with its practice, suggesting that improvisation appears to benefit from a learning process (Miner, Bassoff, and Moorman 2001). Therefore, improvised acts can lead to negative outcomes, but their effectiveness can evolve over time as managers accumulate knowledge and experience. It is thus plausible that brands have not accumulated enough knowledge or experience with the development and implementation of improvised RTM messages in social media. Moreover, the

practice of improvised RTM messages has received very limited attention among scholars, thus limiting the amount of external knowledge available to managers.

Altogether, I believe that my study can help practitioners turn Improvised RTM into an advantage, while guiding scholars into new areas of study on this increasingly important form of brand communication.

2.6 Limitations and Future Directions

First, my analysis is based on post-level data and therefore, cannot take into account individual level effects of RTM messages. Second, the dependent variable is measured by the total level of likes, shares, and comments for each post. I do not observe how the engagement builds over time, which limits my understanding of the total engagement effect of RTM messages. Third, while my data are from 18 brands, the majority of the brands are in the food and beverages category. This could limit the generalizability of my findings to specific product categories and consumer-oriented brands and businesses. Finally, my study is specific to Facebook while real-time messages have also been prevalent in other social media platforms such as Twitter and Instagram. Given that consumer usage is different across social media platforms, it is likely that results may vary by platform.

Future studies could go beyond understanding the main effect of RTM messages and explore how RTM effectiveness varies by type of context. For instance, it is possible that the awareness of a given context may moderate the effect of IRTM on engagement by reducing the risk of misunderstanding. This would suggest that context management can become a more important variable in the design of marketing communications. Another important research direction could include the study of RTM capabilities, in particular, an

exploration into the changes in processes, skills, information, and organizational structure necessary for effective RTM practices. It seems clear from my discussion with managers that RTM is a new type of branded message strategy that may require different intra and inter-organizational relationships. The greater amount of content necessary to communicate in real-time may require different content partners than the traditional advertising agencies. Further, the need for speed may alter traditional collaboration protocols between marketing and finance, legal, or IT departments. The skills of content creators may also need to change, with "improv"-like skills becoming more relevant than the traditional storytelling skills of content creators of the past. Finally, it seems important to continue the exploration into the relationship between measures of engagement in social media and consumer attitudes and behaviors towards brands. In particular, it is possible that not all engagement has the same effect on brand attitudes and purchase behaviors, and that engagement generated via RTM practices or IRTM in particular may have a different effect on brand attitudes or purchases than engagement generated from more traditional content strategies.

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CHAPTER 3: MOBILE CONTENT: UNDERSTANDING DRIVERS OF ENGAGEMENT BY SCREEN

3.1 Introduction

The number of worldwide smartphone users was 2.1 billion in 2016 and is expected to grow to 2.87 billion by 2020 (Statistica). As more people rely on mobile phones to use services and stay connected to the world, marketing researchers have been exploring new marketing dynamics in the mobile environment. While past consumers needed to sit at a desk and turn on their personal computers to be connected to the internet, read news articles, or send emails, the rise of smartphones has enabled such activities to be performed at any time of day and in any place—for example, on the way to work, while eating lunch, or before going to bed. At the same time, the activities consumers perform on mobile phones have become more diverse: among US users, the average time per day spent on the mobile internet has increased from 1 hour and 20 minutes in 2015 to 4 hours and 26 minutes in 2018 (eMarketer). In addition, consumers use their mobile phones for a variety of activities beyond simply talking or texting, which provides advertisers new opportunities (Grewal et al., 2016). Paralleling these changes, expenditures on mobile marketing communications in the US have been rapidly increasing, from $2.4 billion in 2010 to $19.8 billion in 2015, according to the Mobile Marketing Association. Mobile phones have influenced not only consumers' media use but also influenced how they communicate with others (e.g., Melumad et al., 2015; Pelleg et al., 2013). Therefore, understanding how to communicate effectively with consumers on mobile phones will increasingly be a priority for marketers.

It is especially critical to understand how the use of mobile phones has influenced social media marketing. As social media grows into a new marketing channel to reach

and communicate with (and between) consumers more directly and immediately, marketing communications in social media are becoming commonplace. For example, approximately 80% of Fortune 500 companies reported using Facebook for marketing purposes (Stephen et al., 2015). Industry research reports reveal that reach increased (on average) 52-fold when social posts were syndicated by channel partners (Oracle), that 87% of all small businesses claim social media helped their business (Small Business Trends), and that 85% of business decision-makers pointed to at least one social media channel as being very important when making business technology purchases (LinkedIn Business Solutions).

While consumers previously accessed social media mainly from personal computers (PCs), mobile phones are now the dominant device (i.e., the first screen) for social media communications. Given that today's social media platforms allow marketers to target not only consumer groups but also devices, marketers need to understand how social media consumption on mobile phones differs from PCs and, thereby, how to design effectively branded messages for each device. Brand managers must decide whether messages that are more effective on one device should be delivered on that device alone or across devices.

Academics have also begun addressing how to communicate with consumers on social media platforms (e.g., Stephen et al., 2015; Lee et al., 2016; De Vries et al., 2012). While researchers have been actively exploring the impact of mobile phone use on communications, such explorations offer limited insight to the issue of advertising content design in social media. For example, literature provides evidence that messages created by mobile phone differ in systematic ways, such as expressing individuals' more

private and sensitive issues (Pelleg et al., 2013) or including greater use of emotional language (Melumad et al., 2015). However, relatively little is known about differences from a user's perspective (i.e., when messages are viewed on a mobile phone).

This research contributes to the marketing literature by drawing on construal level theory (CLT) to explore how advertising messages vary in their effectiveness, depending on the user's device (mobile phones vs. PCs) using the concept of psychological distance between user and device (mobile phones vs. PCs). A series of lab experiments finds that messages on mobile phones (vs. PCs) are interpreted at a more concrete (vs. abstract) level. This essay also contributes to the marketing literature by exploring content characteristics in social media that drive greater engagement on mobile phones compared to PCs. A series of lab experiments and an archival data analysis demonstrate that temporal distance in messages matters: for example, branded messages framed as more immediate (vs. distant) are more effective on mobile phones.

The essay begins with a review of prior research into the effect of mobile phones and PCs on consumers' experiences and communications. The next section of theory development introduces CLT and propose hypotheses drawing upon the theory. The section also introduces how this theoretical mechanism can provide guidance for social media brand managers in designing effective messages. In the following section, a series of lab experiments and analysis of actual social media data provide evidence that supports the hypotheses. Finally, the essay discusses general implications for marketers and future research directions.

3.2 Literature Review

3.2.1 Impact of Mobile Devices on Shopping Experience

Growing usage of mobile phones has changed consumers' shopping experiences in several important ways. First, the manner in which consumers browse or search for information differs on mobile phones compared to PCs. Many of these disparities arise from technological differences (Grewal et al., 2016). In general, mobile phones have a smaller screen size than PCs, making it more difficult for users to type in text. Additionally, mobile phone users often need to pay data charges based on the number of bytes uploaded or downloaded (Ghose and Han, 2011), thereby requiring more effort and resource to type in texts to create content and search information. Ghose, Goldfarb, and Han (2012) show that links at the top of the screen are more frequently clicked on mobile phones because of the greater search cost (i.e., it takes more effort to scroll down).

Second, product types or preferred attributes are different when viewed on mobile phones compared to PCs. The mechanism that explains the related findings in the literature comes from the differences between mobile phones and PCs (Grewal et al., 2016). Mobile phones are distinct from PCs in that consumers 1) touch the device more frequently, 2) use the device more frequently, on more diverse occasions, and 3) think of it as a more "private" device that is not shared with others. Brasel and Gips (2014) found that the endowment effect (i.e., people value items they own more than ones they do not own; Beggan, 1992) becomes larger on devices with touch interfaces, causing consumers to overvalue these items because they perceive them as their own. Similarly, Shen, Zhang, and Krisna (2016) showed that choice of affect-laden options increases on devices with touch interfaces, resulting in consumers choosing affectively superior options (e.g., a chocolate cake) over cognitively superior options (e.g., a fruit salad).

Third, growing usage of mobile phones also influences how consumers use coupons or choose stores. Grewal et al. (2016) argue that mobile phones are used anytime, from anywhere, and enable multitasking behaviors. For example, consumers use mobile phones to read the latest news or social media posts while eating lunch or on the way to work, which makes it easier for them to retrieve coupons or respond to promotions at the right moment (e.g., on the way to a restaurant or a store). Furthermore, location-based marketing is more important and effective for mobile phone users. As more consumers adopt GPS-enabled technology and rely on location-based applications, marketers have more opportunities to track their geographical information (Luo et al., 2014). Research by Fang et al. (2015) and Fong et al. (2015) demonstrates that location-based mobile promotions are a promising new marketing channel, and that location-based mobile marketing positively influences same-day purchases as well as delayed (subsequent) purchases. Ghose, Goldfarb, and Han (2014) revealed that coupons at proximal stores are clicked on more often on mobile phones, because marketers are better able to identify consumers' locations, and consumers are able to easily access the stores at the right moment that they have a need which can be addressed by that store. Similarly, Moliter et al. (2014) demonstrate that mobile coupon redemption rates rise as consumers move closer to a store. Taking a different perspective, Andrews et al. (2015) found that mobile coupons becomes more effective in crowded spaces, because people tend to look at their phones in such circumstances.

3.2.2 Impact of Mobile Device on Communications

While a vast amount of research in the marketing literature has focused on shopping experiences, the widespread adoption of mobile phones has also significantly

influenced how consumers communicate, in several ways. One of these ways is content generation and usage—that is, how consumers create and consume messages differs depending on the device they use. For example, Ghose and Han (2011) found that a negative temporal interdependence between message generation and consumption; once consumers expend effort to generate content, they are more likely to consume content created by others on mobile phones. This finding is also consistent with the impacts of mobile phones viewed from the technological perspective (Grewal et al., 2016), as it is usually more difficult to type on mobile phones because of the smaller screen size, data usage, internet connectivity, and other factors.

Second, messages generated on mobile phones present different characteristics from the ones generated on PCs. Compared to PCs, messages created by a consumer with a mobile phone express the individual's more private or sensitive issues, such as health, sexual orientation, and relationships (Pelleg et al., 2013). Similarly, Melumad et al. (2015) found that when consumers generate messages with mobile phones, they tend to use more emotional language. Such findings are in line with the notion that mobile phones are perceived as a more private device, as well as the fact that consumers touch or carry them more often.

Finally, messages generated on mobile phones are also perceived as different from the ones generated on PCs. Grewal and Stephen (2015) find that consumers tend to perceive that messages created on mobile phones are more trustworthy, and, as a result, online reviews that mention being generated on mobile phones are more effective. The rationale is based on the expectation that it is more difficult to type on mobile phones, leading consumers to value the effort involved in message creation.

While the above findings provide a number of insights into how communications differ on mobile phones and PCs, the main focus of these previous studies has been on how communications differ when messages are created on mobile phones. On the other hand, few studies have focused on the message user's perspective—that is, how communications differ when a message is viewed on a mobile phone. Individuals consume messages created by others as much as (or more than) they create messages on their own, and in the context of marketing in social media, more users are content consumers than content creators. Thus, academic research is needed to investigate the effectiveness of content characteristics that drive consumers to pay attention to and consume the contents of branded social media messages.

To study the user perspective in the consumption of branded messages in mobile phones, I draw on construal level theory. Using the concept of psychological distance and CLT, I develop hypotheses regarding how consumers process messages differently on mobile phones than PCs, and I draw implications for marketers and brand managers.

3.3 Theory Development

3.3.1 Construal Level Theory

Construal level theory examines how people think of objects in terms of distance and how that thinking in turn influences subsequent judgements and information processing (e.g., Trope and Liberman, 2000). The main proposition of CLT is that objects are construed at a more abstract or concrete level depending on the distance perceived, such that people rely on abstract and schematic processing for objects that are perceived to be more distant, while relying on concrete and non-schematic processing for objects

that are perceived to be more proximal. A related and well-researched concept in the CLT literature is temporal distance, defined as *the perceived proximity of an event in time*. (e.g., Liberman et al., 2002; Trope and Liberman, 2003). Prior research demonstrates that a distant (vs. near) future event is perceived to be further (vs. closer) from the self (i.e., further psychological distance), which results in a more abstract (vs. concrete) level of construal (Liberman and Trope, 1998; Trope and Liberman, 2003). For example, if a person is asked to imagine and describe her day tomorrow, the day is likely to feel "closer" to her, and she is likely to rely on low-level construals; therefore, she will use more concrete terms to describe the day—for example, having a "meeting at 10 am" and "inviting friends to her house for dinner at 7 pm." In contrast, when she is asked to imagine and describe a day a year in the future, she is likely to rely on high-level construals and use more abstract terms—for example, having "a busy day at work," having a "good time with friends."–because the day feels more distant to her.

The CLT literature shows that other dimensions of distance also exist, such as social or spatial distance. Spatial distance (i.e., how distal in space is the target from the perceiver; Bar-Anan, Liberman, and Trope, 2006) is also translated to psychological distance and influences the level of abstraction as well as the words participants choose in describing objects (e.g., Fujita et al., 2006). Similarly, social distance (i.e., how distinct is the social target from the perceiver's self - e.g., self vs. others, friends vs. stranger; Bar-Anan, Liberman, and Trope, 2006) is translated to psychological distance, such that if a person is less similar to another, he/she is perceived to be socially distant, and behavior observed by a dissimilar other is represented at a higher level of construal than a similar other (Liviatan, Trope, and Liberman, 2006).

3.3.2 Implications of CLT for Use of Mobile Phones vs. PCs

Drawing on CLT research, I contend that mobile phones are different from PCs in several ways that could relate to psychological distance. First, mobile phones have a touch interface—that is, consumers touch the screen to operate the device more often than on PCs. Second, because consumers usually place mobile phone close to themselves when using it, the spatial distance between user and device is closer. Third, consumers carry and use mobile phones more often from more diverse locations and occasions during the day. Finally, the mobile phone is a more private device that contains personal information such as bank or social media accounts, contacts, and text messages, and thus it is a device not shared with others.

Previous studies on mobile phone use provide evidence of consumers' unique relationships with the devices. Outside of the marketing literature, "smartphone addiction" has been received a great deal of attention (Melumad et al., 2017). The phenomenon captures use of the device that is excessive, disruptive, or detrimental to one's life, which decreases productivity, degrades interpersonal interactions, and may cause safety issues (e.g., Bianchi and Phillps, 2005; Yen et al., 2009). Researchers have focused primarily on negative outcomes of smartphone addiction, such as higher rates of sleep disturbances or depressive symptoms (Thomee, HarenStam and Hagberg, 2011), or fear of social exclusion when separated from the devices (e.g., James and Drennan, 2005). At a much earlier stage, marketing researchers have also examined how consumers form relationships with mobile phones. Melumad et al. (2017) found that consumers form a strong emotional attachment towards their mobile phones because they associate the device with positive outcomes and therefore expect positive outcomes. They

also argue that engagement with phones as an attachment object provides a feeling of comfort, consistent with literature finding that smartphones are used as a means of relaxation (Harvard Business Review, 2013; Leung and Wei, 2000). Moreover, consumers often feel distressed when separated from their mobile phones, showing increased levels of anxiety (Cheever et al., 2014; Clayton et al., 2015).

Therefore, I contend that consumers "feel closer" to their phones compared to their PCs; in other words, the psychological distance between user and device is closer for mobile phones than for PCs. If so, then the central tenets of CLT suggest that consumers construe messages at a more concrete (vs. abstract) level when using mobile phones.

H1: Messages are construed at a more concrete (vs. abstract) level when read on mobile phones compared to PCs.

If the nature of device being used influences construal level, then the next question for marketers is about the implications of this difference—that is, how to design messages to be consumed using different devices. This section explores what content characteristics should be more effective if mobile phone users construe messages at a more concrete level. The main concept in the CLT literature and one of the most common and important concepts used in marketing practice is temporal distance. In social media, brands often create messages related to current moments or events to capture consumers' attention. Additionally, brands use social media platforms to communicate with consumers when introducing new products or running time-limited promotions. These messages contain information about "time," and they often differ in temporal distance.

Drawing on the theory, I contend that use of mobile phones leads to low-level construals and in turn influences the appeal of different messages depending on the device used. For instance, I suggest that messages that are immediate will be more engaging on mobile phones. In the context of social media, branded messages that discuss immediate timing compared to the distant future will be more effective in engaging consumers on mobile phones.

Evidence supporting this conjecture can be found in literature on congruency and processing fluency. The persuasiveness of a message is enhanced when the message frame matches the mental representation of the recipient in general (Schwarz and Clore, 1983) because the consumer experiences greater processing fluency. For example, Lee and Labroo (2004) found that a fit between the message frame and a consumer's regulatory focus enhances message persuasiveness. When they presented participants with a message emphasizing the promotion benefits of being energized (vs. the prevention benefits of avoiding clogged arteries) in a gain frame (e.g., "Get Energized"), participants experienced greater processing fluency compared to a loss frame (e.g., "Don't miss out on getting energized"), resulting in a more persuasive message. Similarly, Thompson and Hamilton (2006) found that a fit between ad format and the viewer processing mode (i.e., comparative advertisements with analytical processing and non-comparative advertisements with imagery-based processing), facilitated information processing, thereby making the message more persuasive. Such a fit consequently enhances brand evaluations and purchase intentions.

Related research has demonstrated that congruency between a consumer's mental representation and the construal level of a decision context results in greater processing

fluency (Kim et al. 2009; White et al. 2011) and enhanced evaluations (Sanna et al. 2010; Zhao and Xie 2011). For example, Kim et al. (2009) found that a match between message abstractness (i.e., abstract vs. concrete) and temporal focus of the recipient (i.e., contemplating a consumption event in the distant vs. near future) leads to a feeling of fluency, which in turn leads to a sense of "feeling right" about the consumption event (Reber, Schwartz, and Winkielman, 2004). Consequently, this "feeling right" results in enhanced evaluation. Similar results have been found in different contexts, including the valuation of consumption objects (Higgins et al., 2003), the effectiveness of recommendations in shifting product preferences (Zhao and Xie, 2011), and the perceived importance of healthy behavior (Cesario et al., 2004).

In the context of social media branded messages, it is predicted that when a consumer's mental representation and construal level in a message is congruent (i.e., low-level vs. high-level construals and immediate vs. future timing messages), this will lead to greater processing fluency and thereby enhanced evaluations of the message.

H2: Consumers engage in messages that are immediate (vs. distant) to a greater extent when reading those messages on mobile phones (vs. PCs).

3.4 Study 1: Effects of Device on Construal Level

The purpose of Study 1 was to test H1 by examining whether reading a message on a mobile phone compared to a PC leads to low-level construals. Participants accessed online study materials from either their mobile phones or their PCs, and the devices they used were verified before they participated. Participants completed a task designed to

examine construal levels. Study materials were adopted from the prior construal-level literature (e.g., Trope and Liberman, 2000).

3.4.1 Study 1a

Method

Stimuli. This study examined the effects of a user's device on preferences for two work-study jobs (Trope and Liberman, 2000). Both job descriptions included a primary job to be completed, along with associated training. One option described an interesting job with uninteresting training, and the other option described an uninteresting job with interesting training. According to CLT, low-level construal is associated with focusing more on peripheral and contextualized aspects of an object, whereas high-level construal is associated with more central and decontextualized aspects of the object. Since the main job is more central than training, low-level construal focuses more on training, while high-level construal focuses more on the main job in the job descriptions.

In one of the studies by Trope and Liberman (2000) on the effect of temporal distance on construal level, participants were provided a job description and were told to start the job either tomorrow (i.e., immediate) or a year later (i.e., in the distant future). Participants under a condition of beginning work in the distant future focused more on central aspects of the description, which resulted in a preference for the interesting job with uninteresting training over the uninteresting job with interesting training. I adopted the idea from that study and used the stimuli from Trope and Liberman (2000) to show the effect of user device on construal level instead of temporal distance. I reasoned that participants using mobile phones in the study would focus more on peripheral aspects of the description than central ones, resulting in a preference for the uninteresting job with

interesting training over the interesting job with uninteresting training (see Appendix A for stimuli details).

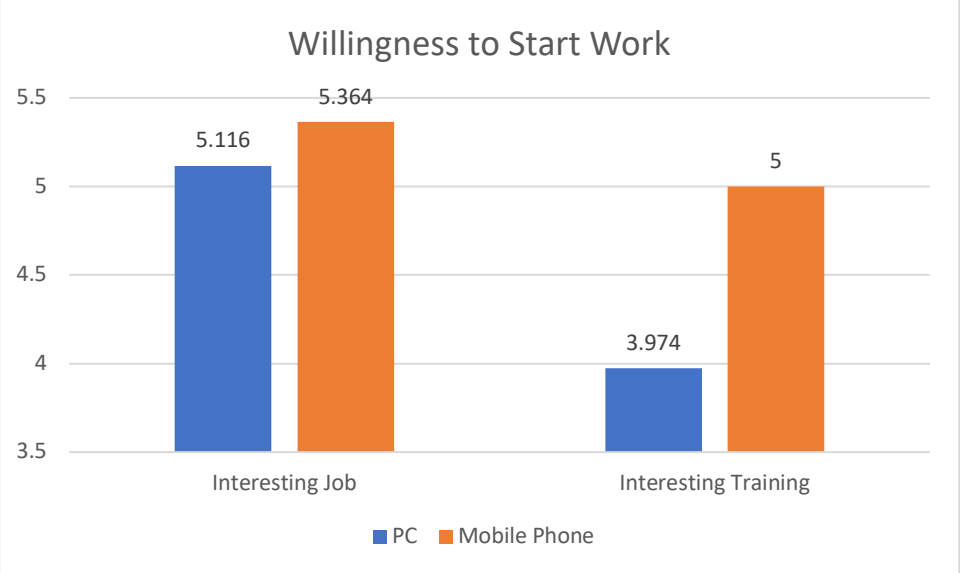
Procedure. 148 participants living in the US (51% female) were recruited from Amazon Mechanical Turk (AMT) in exchange for monetary payment. Two separate study links were created for mobile phone users and PC users, such that the link for mobile phone users filtered out users accessing it from PCs, and the same approach was also used for the link for PC users. Next, in order to remove any duplicates, participants who completed both the study links were excluded from the analysis using user IDs. In the introduction to the study, participants were told that they would be assigned to a work-study job in a social psychology lab, and that they were about to read the job description. After the introduction, participants were randomly assigned to one of the two conditions (interesting job with uninteresting training vs. uninteresting job with interesting training). Each participant accessed the study from either a mobile phone or a PC, which led to a 2 x 2 between-subjects design (interesting job with uninteresting training vs. uninteresting job with interesting training; mobile phone vs. PC). After reading the job description (see Appendix A), they were asked how much they would like to start working the job using a seven-point scale ranging from 1 (*not at all*) to 7 (*very much*).

Results and Discussion

A 2 (device: mobile phone vs. PC) x 2 (type of job) analysis of variance (ANOVA) revealed a main effect of type of job ($M_{\text{interestingjob}}$ = 5.24 vs. $M_{\text{interestingtraining}}$ = 4.49; F (1,145) = 9.92, p = .002), indicating that overall preference was higher for the

interesting job with uninteresting training than uninteresting job with interesting training. This confirmed the expectation that the main job was more central (i.e., important) than training in the job description. In support of Hypothesis 1, there was also a significant interaction effect between user device and type of job (F (1,145) = 2.80, p = .097), which indicates that the preference for the uninteresting job with interesting training over the interesting job with uninteresting training is more pronounced on mobile phones (Figure 3.1). The results are in line with the logic that participants using mobile phones focused more on peripheral aspects of the job descriptions, while participants using PCs focused more on central aspects.

Figure 3. 1 Interaction Effects of Type of Job and Device on Preference (Study 1a)



3.4.2 Study 1b

Method

Stimuli. Extending the examination of Study 1a to product preferences, this study further explores the idea of the effect of user's device on construal level to determine whether the effect holds in the context of product preferences (Trope and Liberman, 2000). Participants were given one of two product descriptions about a radio set. Both product descriptions included how the radio set functioned both as a radio as well as a clock. One of the product descriptions had a radio with high sound quality but a poor built-in clock, whereas the other product description had a good clock but a radio with poor sound quality (see Appendix B for stimuli details). Since features that are relevant to the product's intended goal (i.e., radio) are more central than features that are irrelevant to the product's goal (i.e., clock), low-level construals should be highly associated with the quality of clock, and high-level construals should be highly associated with the sound quality of the radio (Trope and Liberman, 2000). Therefore, I predicted that participants with mobile phones would focus more on the quality of the clock, resulting in a preference for a radio set with a good built-in clock but poor-quality radio.

Procedure. 125 participants in the US (56% female) were recruited from AMT for monetary payment. In the introduction, participants were randomly assigned to one of the two radio set descriptions. Each participant accessed the study from either a mobile phone or a PC, which led to a 2 x 2 between-subjects design (a high-quality radio with a poor built-in clock vs. a poor-quality radio with a good built-in clock; mobile phone vs. PC). Access to the study via mobile phone vs. PC was manipulated in the same way as study 1a. After reading the product description, participants were asked 1) how attractive they perceived the product to be, and 2) how much they would be satisfied with their purchase. Both items used seven-point scales ranging from 1 (*not at all*) to 7 (*very much*).

Results and Discussion

A 2 (device: mobile phone vs. PC) x 2 (type of product) analysis of variance (ANOVA) revealed a main effect of type of job ($M_{goodradio}$ = 4.06 vs. $M_{goodclock}$ = 3.75, F (1,121) = 6.59, p =.01) on product preference, indicating that overall preference for product was higher for a radio set with a high-quality radio but poor built-in clock than for a poor-quality radio with a good built-in clock. Similar to the Study 1a, this finding confirmed the idea that the quality of radio is more central than the quality of clock for a radio set. More importantly, analysis revealed a significant interaction effect between user device and type of product (F (1,121) = 8.92, p = .003). Additionally, similarly to Study 1a, a significant interaction effect was found between device and type of product (F (1,121) = 7.38, p = .008) on satisfaction with purchase. The results indicate that preference for a radio set with a poor-quality radio but a good built-in clock over a high-quality radio with a poor built-in clock was more pronounced on mobile phones (Figure 3.2 and 3.3). Together, these results provide evidence supporting H1: participants seeing a product description on mobile phones focused more on the peripheral aspects of the product, while participants seeing the description on PCs focused more on central aspects of the product.

Figure 3. 2 Interaction Effects of Type of Product and Device on Attractiveness of the Product (Study 1b)

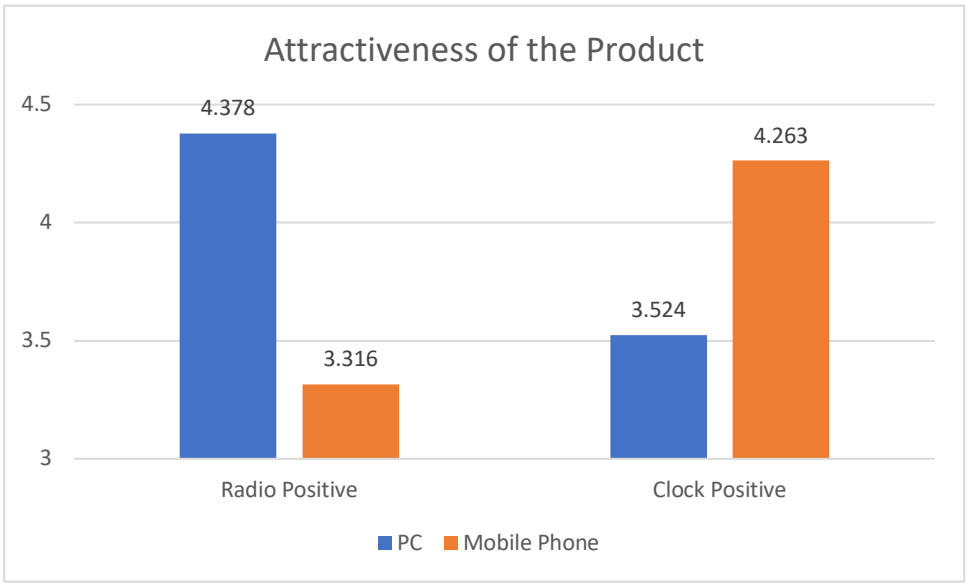
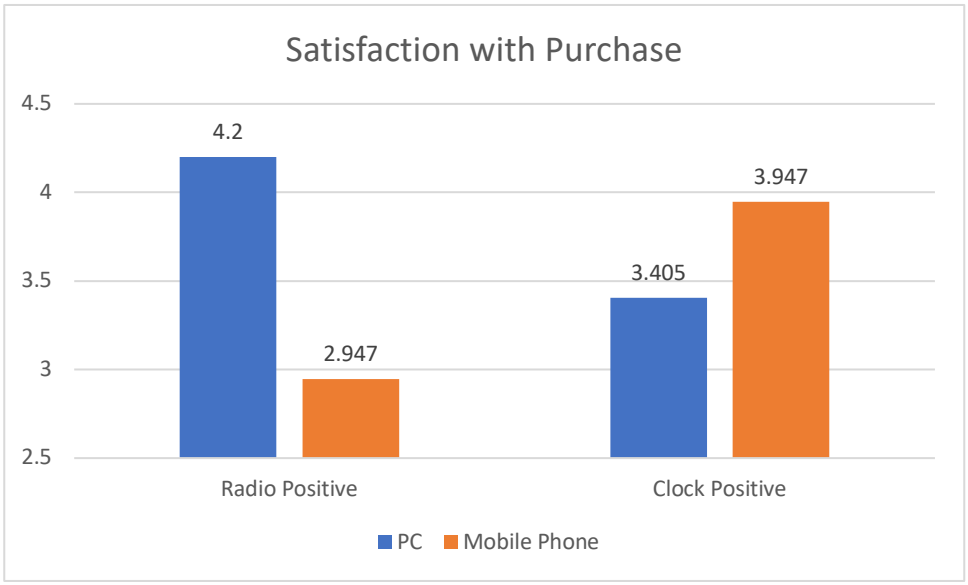


Figure 3. 3 Interaction Effects of Type of Product and Device on Satisfaction with Purchase (Study 1b)



3.5 Study 2: Effects of Device and Temporal Distance on Engagement in Social Media

The purpose of Study 2 is to test H2 to determine whether messages containing closer temporal cues are more effective when consumed on mobile phones. In the following series of studies, participants accessed social media branded messages, from either their mobile phones or PCs, and the devices they used were verified in the same way as in Study 1. In Study 2, I manipulated temporal cues in social media branded messages and examined consumers' attitude toward the messages, as well as their intention to share.

3.5.1 Study 2a

Method

Stimuli. This study examined the effect of user device and temporal distance on consumers' attitude toward the message as one way to measure engagement with branded messages in social media. Participants read a social media branded message, which was collected from actual Facebook brand pages and manipulated using different temporal distance cues. To induce interest in participants, the branded message was selected from the 25 most influential brands on Facebook that generate the highest level of engagement outcomes in five metrics (total number of fans, total posts in the last 30 days, total micro-influencer comments, total engagements driven, and average influencer index; Marvrck analysis). In this study, participants saw the same branded messages in each condition but with different temporal distance cues about a promotion's expiration date. Both messages included a photo and a text about a product's promotion, with different temporal distance

(immediate vs. distant future) mentioned in the message (see Appendix C for stimuli details).

Procedure. 261 participants in the US (49% female) were recruited from AMT for monetary payment. In the introduction, participants were first told that a company was trying to understand how brands use social media to communicate their messages with consumers and were then asked to read a social media post by a popular brand. After the introduction, participants were randomly assigned to one of the two social media posts with different expiration dates of the promotion (tonight vs. next month; see Appendix C). Each participant accessed the study from either a mobile phone or a PC in the same way as Study 1, which led to a 2 x 2 between-subjects design (mobile phone vs. PC; tonight vs. next month). After reading the post, participants were asked to rate their attitude toward the post using measures taken from the advertising literature, on 7-pt Likert scales: 'unfavorable vs. favorable', 'negative vs. positive', 'bad vs. good', and 'undesirable vs. desirable' (Cronbach's alpha = .96; e.g., De Pelsmacker, Decock, and Geuens, 1998).

Manipulation Check. In order to check if the temporal distance manipulation was successful, I asked participants' perceived immediacy in a pre-study. 251 participants were given the same message used in the main analysis of Study 2a but were asked to answer items including 'I feel the event in the message is happening soon' and 'I feel the event in the message is close to me,' using seven-point Likert scales. A one-tailed t-test revealed that participants in the immediate condition reported higher perceived immediacy compared to the distant future condition ($M_{\text{immediate}} = 5.29$ vs. $M_{\text{distant}} = 5.0$;

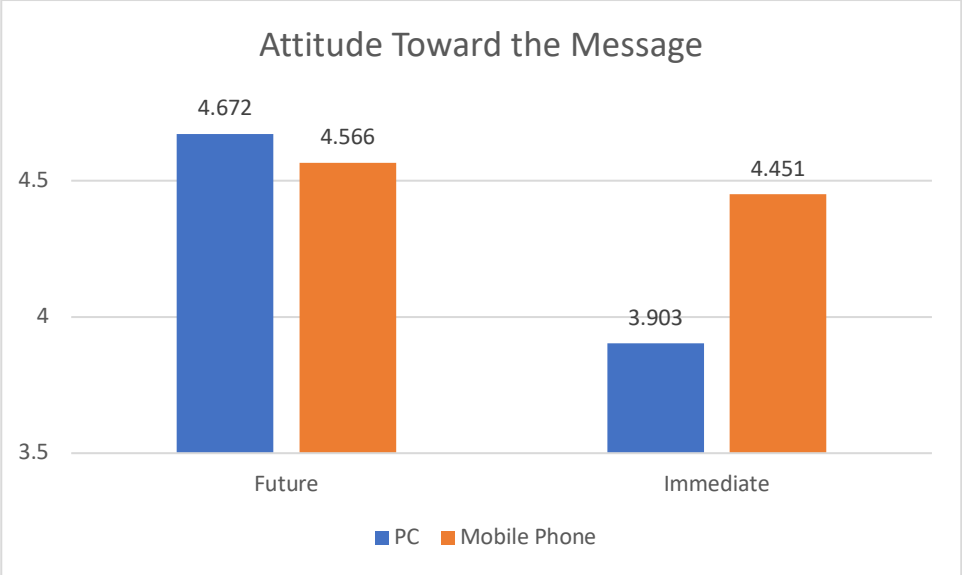
$t(249) = -1.45$, $p=0.07$), demonstrating that the immediacy was very high in the immediate condition and very low in the distant future condition.

Results and Discussion

In a 2 (device: mobile phone vs. PC) x 2 (temporal distance: immediate vs. distant future) analysis of variance (ANOVA), the main effect of device on attitude toward the post was not significant ($M_{mobile} = 4.51$ vs. $M_{pc} = 4.28$; $F(1, 257) = .17$, $p = .67$). However, a significant main effect of temporal distance was found ($M_{immediate} = 4.17$ vs. $M_{distant} = 4.62$; $F(1, 257) = 9.29$, $p = .002$), indicating that participants' attitudes towards the post were more positive for distant temporal messages. This finding is consistent with the idea that consumers prefer promotions that expire later rather than sooner. Supporting Hypothesis 2, a significant interaction effect was found between device and temporal distance on attitude toward the post ($F(1,257) = 3.34$, $p = .07$), which indicates that engagement with more proximal social media posts is higher on mobile phones. The results support the prediction that participants using mobile phones would engage more with posts with more proximal temporal distance. One possibility is that differences in temporal distance in the messages influenced other characteristics that resulted in different attitudes toward the post. For example, it is possible that a closer temporal distance helps consumers to understand the message, or that it provides more information to consumers. Alternatively, differences in the temporal distance of messages might lead to varying levels of "fit" between the brand and the message. To rule out such possibilities, I also asked other questions related to the message, such as about comprehension of the message, amount of information received, and the fit between the brand and the message, but found no significant effects ($F(1,257) = 2.15$, $p = .14$ for

comprehension; F (1,257) = .42, p = .52 for information; F (1,257) < .01 , p = .99 for brand fit).

Figure 3. 4 Attitude Towards the Message by Device and Temporal Distance



3.5.2 Study 2b

Method

Stimuli. As a replication and extension of the findings from Study 2a, Study 2b examined the effects of user device and temporal distance on consumers' engagement with branded messages in social media, using more diverse outcomes. While the previous study measured attitude toward the message, this study measured willingness to share and intention to purchase. The latter measures represent more diverse engagement outcomes that are more directly relevant to 1) social media activities and 2) actual purchase. Similar to Study 2a, study participants read a branded social media message, selected from a popular brand on Facebook. Temporal distance cues varied by condition: both messages

included a photo and text about a product's promotion, but the product introduction date varied (immediate vs. distant future; see Appendix D for stimuli details).

Procedure. A total of 320 participants in the US (59% female) were recruited from AMT in exchange for monetary payment. In the introduction, participants were told that a company was trying to understand how brands use social media to communicate their messages to consumers, and that they would be asked to read a social media post by a popular brand. After the introduction, participants were randomly assigned to one of the two temporal distance conditions (now vs. this winter; see Appendix D). Each participant accessed the study from either a mobile phone or a PC in the same way as Study 1 and Study 2a, which led to a 2 x 2 between-subjects design (mobile phone vs. PC; now vs. this winter). After reading the post, participants were asked to answer questions about willingness to share the post and intention to purchase, using seven-point Likert scales. Measures of willingness to share were adopted from the social media literature, and included items such as "How likely are you to share the post with others?" and "How likely are you to talk about the content of the post with others?" (e.g., Akpinar and Berger, 2017) Intention to purchase was measured using an item "How likely are you to purchase the product in the post in the future?"

Manipulation Check. In order to check if the temporal distance manipulation was successful, I asked participants' perceived immediacy in a pre-study, which is identical to the pretest in Study 2a. 126 participants were asked to answer items including 'I feel the event in the message is happening soon' and 'I feel the event in the message is close to me,' using a seven-point Likert scale. A one-tailed t-test results revealed that participants in the immediate condition reported higher scores of perceived immediacy compared to

the distant future condition ($M_{immediate}$ = 4.30 vs $M_{distant}$ = 3.87; $t(124) = -1.62$, p=0.54), demonstrating that the immediacy was very high in the immediate condition and very low in the distant future condition.

Results and Discussion

In a 2 (device: mobile phone vs. PC) x 2 (temporal distance: immediate vs. distant future) analysis of variance (ANOVA), no main effect of temporal distance on willingness to share was found ($M_{immediate}$ = 2.16 vs. $M_{distant}$ = 2.22; F (1, 302) = 2.34, p = .13). However, a significant interaction effect between device and temporal distance was found for willingness to share the post (F (1, 302) = 3.42, p = .065) and intention to purchase the product (F (1, 302) = 3.56, p = .06). This result indicates that engagement with more proximal social media posts was higher on mobile phones than PCs (Figure 3.5 and 3.6). The results support the prediction that participants on mobile phones would engage more with posts with more proximal temporal distance, and the effects hold beyond attitudes toward the post. Similar to Study 2a, I asked other questions related to message characteristics, such as comprehension of the message, amount of information received, and brand fit, but found no significant effects (F (1,302) = .30, p = .58 for comprehension; F (1, 302) = .72, p = .40 for information; F (1, 302) < .08, p = .77 for brand fit). Thus, it is unlikely that these characteristics were responsible for the observed differences in intention to share and purchase the product.

Figure 3. 5 Willingness to Share the Message by Device and Temporal Distance

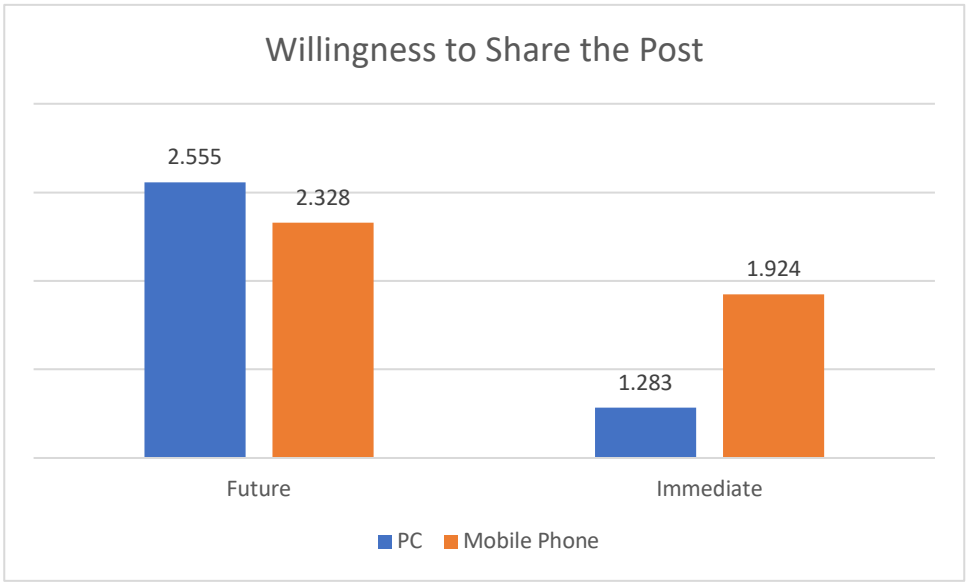
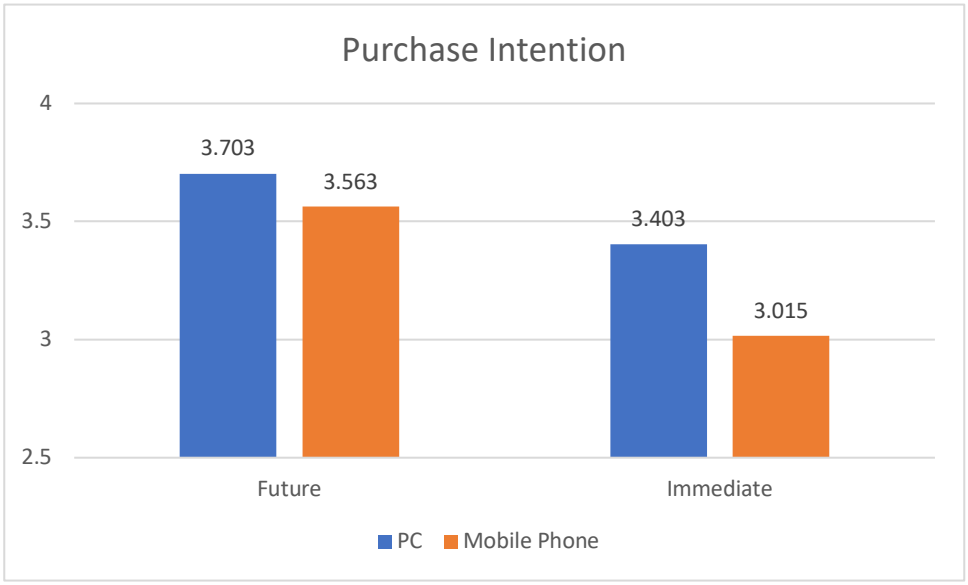


Figure 3. 6 Purchase Intention of the Product in the Message by Device and Temporal Distance



3.6 Study 3: Analysis of Social Media Data

While results from Studies 2a and 2b revealed an interaction between device and temporal distance on engagement with social media messages in a controlled environment, Study 3 also tests Hypothesis 2 using archival data and demonstrates that the results hold in the actual social media platform.

Data Collection

I collected social media data to examine the interaction effect of device and temporal distance on consumer engagement. The field data consisted of information collected from two sources. First, an advertising agency helped us collect data for social media engagement metrics. For each post, the agency provided information about the level of engagement per device, including the number of likes or shares created from users exposed to brand messages on either mobile phones or PCs. Therefore, I was able to collect information on the number of consumers who reacted to each post from mobile phones and PCs separately. Second, an online consumer panel was used in order to collect information about content characteristics.

Using these two sources, I collected a dataset of Facebook posts by two beverage brands in 2016. The dataset included 217 posts in total; all were paid posts, meaning that they were paid for in order to have more exposure. Only paid posts were included because engagement metrics across devices were only available for paid posts. While the agency provided information for all devices consumers used to see the posts (e.g., PCs, smartphones, tablets, iPods, etc.), only PCs and mobile phones were included in the analysis, as they account for 90% of time spent on social media (comScore.com).

Dependent Variables. I considered three primary engagement metrics for the analysis, which are the number of post reactions, shares, comments. Recent work on consumer engagement has attempted to distinguish customer attitudes and behaviors that go beyond purchase (Lemon and Verhoef, 2016). Vivek et al. (2012) provide an overview of the engagement literature and define customer engagement as "the intensity of an individual's participation in and connection with an organization's offerings or organizational activities, which either the customer or the organization initiates." Following this approach, research in the domain of digital and social media uses relevant metrics such as "likes," "shares," or "comments" (e.g. Stephen et al., 2015; Yang et al., 2016; Lee et al., 2018). "Reactions" is a new form of likes, introduced in February 2016, that includes all reactions consumers leave to a post in the form of emoticons, including "like, love, haha, wow, sad, or angry. "Shares" refers to the number of times a post is shared by consumers. "Comments" refers to the number of comments left on a post by consumers.

Independent Variables. Device information was collected with the help of the advertising agency. For each post, I collected the number of likes, shares, and comments per device, and only mobile phones and PCs were included in the dataset. Temporal distance information was collected using text mining. If the text in the post contained any words like "today," "tomorrow," "immediately," "right now," "soon," or "live"—all of which imply immediate timing—then the post was coded as "1." Otherwise it was coded as "0," implying a non-immediate message.

Control Variables. In addition to the main variables of interest, I also collected other variables to control for content characteristics associated with consumer

engagement in social media. While not included in the main study variables, such variables are found to be important drivers of engagement in social media marketing which could also influence engagement outcomes in this analysis. To select control variables, I followed the approach of Lee, Hasanagar, and Nair (2018) and Stephen, Sciandra, and Inman (2015). The control variables can be categorized as 1) persuasion-oriented, 2) information-oriented, 3) calls to action, 4) media elements, and 5) others. An overview of the variables and descriptive statistics is provided in Table 3.1.

1) Persuasion-oriented variables refer to the extent to which branded content has characteristics that may persuade or influence consumers' attitudes, opinions, or behaviors (Stephen et al., 2015; Lee et al., 2018). I accounted for such variables including use of images of people, use of celebrity, use of emoticons, message creativity, brand fit, and message understanding. Past work has shown that such elements can affect consumers' attention and recall (e.g., MacInnis et al., 1991) and engagement in social media (e.g., Stephen et al., 2015; Lee et al., 2018; De Vries et al., 2012).

2) Information-oriented variables refer to the extent to which branded content has characteristics associated with particular information cues (Stephen et al., 2015). I considered types of topics, mentions of food or beverage occasions, use of external events, and whether the message was based on logic or emotion. The effects of information cues in advertising have been examined in prior literature; for example, Resnick and Stern (1977) review how various information cues affect advertising effectiveness. More recently, social media researchers also consider information cues in branded content to be drivers of engagement in social media; Stephen et al., (2015) and Lee et al., (2018) find that informative content such as product information, promotions,

or campaigns can influence engagement outcomes in social media. Also, items such as category of topics, use of emotions, or mentions of events are found to engage consumers in social media (e.g., Lee et al., 2018; De Vries et al., 2012).

3) Calls to action refer to the extent to which branded content explicitly encourages consumers to take specific actions such as liking a post, leaving a comment, following an external link, or answering a question (Stephen et al., 2015). It is common practice among social media marketers to encourage such actions. Social media researchers have been examining the effectiveness of use of calls to actions (e.g., De Vries et al., 2012; Stephen et al., 2015; Zalmanson and Oestreicher-Singer, 2015). In this analysis, I consider two types of calls to actions – calls to actions to provide more information to consumers and to engage consumers to participate in certain activities.

4) Media elements refers to whether branded content is comprised of other types of media such as images, videos, and links to external webpages in addition to text (Stephen et al., 2015; Keller 2009). Following the extant social media literature (e.g., Stephen et al., 2015; Lee et al., 2018), I considered items such as use of photo, text length, use of URLs, and uses of hashtags in the analyses.

5) In addition to the above variables, I also included the amount of money spent on each post and the number of promotion days as control variables, as they are also likely to influence engagement outcomes in social media.

Table 3. 1 Overview of the Variables and Descriptive Statistics

Variable	Tagging Method	Description	Mean	SD
Post Reactions	Agency	The number of reactions the message received	7891.65	22919.41
Post Shares	Agency	The number of shares the message received	244.80	1031.56
Post Comments	Agency	The number of comments the message received	135.79	346.45
Use of Mobile	Agency	1 = Viewed on mobile phone / 0 = PC	0.51	0.50
Immediate	Text Analysis	1 = Immediate message/ 0 = No	0.11	0.32
Amount Spent	Agency	The estimated total amount of money spent on campaign during its schedule.	14860.60	39783.69
Campaign Days	Agency	The total number of days of campaign	38.02	26.83
Use of Photo	Text Analysis	1 = Photo / 0 = no photo	0.60	0.49
Log of Text Length	Text Analysis	Number of characters in message	4.62	0.53
Topic: Music	Agency	1 = Topic of the message is about music / 0 = no	0.42	0.49
Topic: Sports	Agency	1 = Topic of the message is about sports / 0 = no	0.26	0.44
Topic: Social Cause	Agency	1 = Topic of the message is about social cause / 0 = no	0.42	0.49
Topic: Other	Agency	1 = Topic of the message is about others / 0 = no	0.26	0.44
Topic: Product	Agency	1 = Topic of the message is about product / 0 = no	0.92	0.27
Use of Images of People	Agency	1 = Contains images of people / 0 = no	0.77	0.42
Use of Celebrity	Agency	1 = celebrity in message / 0 = no	0.20	0.40
Mentions Food Occasions	Agency	1 = mentions food occasions / 0 = no	0.20	0.40
Mentions Beverage Occasions	Agency	1 = mentions beverage occasions / 0 = no	0.15	0.35
Call to Action: More Info	Agency	Sum of invitations to 1) watch a video, 2) visit a website, 3) learn product info	0.97	0.90
Call to Action: Engage	Agency	Sum of invitations to 1) respond to a question, 2) like, or 3) share the message	1.57	0.85
Creativity (α=0.77)	Consumer	The message is 1) expected, 2) interesting, 3) well designed, 4) original, 5) different (1=SD/ 7=SA)	4.50	0.77
Logic vs. Emotion	Consumer	1) The message points to the feelings (vs. logic) of the audience, 2) The message is emotional (vs. logical) (1=SD/ 7=SA)	5.22	0.94
Use of Emoticon	Consumer	1 = Emoticon in message / 0 = no	0.21	0.41
Use of URL	Text Analysis	1 = URL in message / 0 = no	0.25	0.44
Use of Hashtag	Text Analysis	1 = hashtag in message / 0 = no	0.71	0.45
Brand Fit (α=0.91)	Consumer	1) There is a very close relationship between the brand and the message, 2) the message is very appropriate for the brand, 3) it makes a lot of sense for the message, 4) it is a perfect message for the brand (1 = SD/ 7 = SA)	5.48	0.87
Understanding (α=0.74)	Consumer	1) I understood all the questions well, 2) I paid close attention to each question, 3) I feel confident in my answers	6.39	0.54
Use of Event	Agency	The message contains 1) a daily moment of each day or 2) a news story or event (1 = yes, 0 = no)	0.78	0.62

3.6.1 Empirical Considerations

Prior to testing the hypothesis, I addressed the following considerations coming from the nature of the data. First, the distribution of post engagement given below reveals that the dependent variables are non-negative and integer count variables that display over-dispersion, with a variance significantly larger than the mean. While this suggests using a zero-inflated negative binomial or a negative binomial model, results of the Vuong test suggests that it is appropriate to use a negative binomial model (p =.64 for likes; p = .99 for shares). Therefore, I concluded that the negative binomial model would provide a better fit to the data (Greene 2004). Second, brand fixed effects were included to account for differences in the size of the social media network for each brand, as well as to capture brand-specific social media capabilities. These capabilities are inherently unobserved and could serve as omitted variables, the exclusion of which could bias model estimates (Wooldridge 2010). Therefore, the main specification used in the analysis was as follows:

$$\text{Likes/Shares/Comments}_{ij} = \alpha_0 + \beta_1 \text{Device}_{ij} + \beta_2 \text{Temporal Distance}_{ij} + \beta_3 (\text{Device x Temporal Distance})_{ij} + \beta_4 \text{Controls}_{ij} + \beta_5 \text{Brand Fixed Effects}_{ij} + e_{ij}$$

In the equation above, Device represents a vector of device (mobile phones and PCs) for brand i (1 to N) and post j (1 to J); Temporal Distance represents temporal distance (immediate vs. non-immediate); Controls represents a vector of control variables; Brand Fixed Effects denotes a vector of brand fixed effects; and e represents the error terms.

3.6.2 Results

First, I examined the distribution of post reactions and shares by device type. In both metrics, the average number of reactions and shares was significantly higher for mobile phones than for PCs (M_{mobile} = 14,480.16 vs. M_{pc} = 1,112.16 for reactions; M_{mobile} = 409.86 vs. M_{pc} = 74.94 for shares). This finding supports the idea presented at the beginning of this essay that more and more consumers are using mobile phones, especially to access social media platforms. As model-free evidence, I also examined the average number of post reactions and shares in by user device and temporal distance. As shown in Table 3.2, the average number of reactions was higher for immediate messages compared to non-immediate messages, and for mobile phones compared to PCs; the number of reactions was highest when immediate messages were viewed on mobile phones. Similarly, Table 3.3 reveals that the average number of shares was higher for immediate messages and for mobile phones; the number of shares was highest when immediate messages were viewed on mobile phones. These tables provide tentative evidence in support of Hypothesis 2, indicating that more immediate messages are more effective on mobile phones.

Table 3. 2 Average Number of Post Reactions

	Immediate		Non-Immediate	
	Mean	SD	Mean	SD
Mobile	23336.542	12513.829	13555.545	20868.149
PC	3258.87	70203.805	843.821	3258.870

Table 3. 3 Average Number of Post Shares

	Immediate		Non-Immediate	
	Mean	SD	Mean	SD
Mobile	794.167	2108.612	361.063	1276.934
PC	110.174	228.942	70.538	331.389

Next, the results from the negative binomial model for post reactions and shares demonstrate how the effects of device and temporal distance affect engagement metrics. As can be seen in Table 3.4, the main effect of device was significant ($\beta = 2.01$, $p < .001$), which implies that more shares were created via mobile phones. The effect of temporal distance was not significant ($\beta = .01$, $p = .98$). Most important, the interaction between device and temporal distance on reactions was marginally significant ($\beta = .73$, $p = .064$), which indicates that the effect of immediacy on reactions was more positive for mobile phones. Analyses of shares yielded similar results. Table 3.5 shows a significant main effect of device ($\beta = .93$, $p < .001$) and a non-significant effect of temporal distance ($\beta = -.35$, $p = .32$). Most important, the interaction effect was marginally significant, such that the effect of immediacy on shares was more positive for mobile phones ($\beta = .81$, $p = .063$). The results provide evidence supporting Hypothesis 2, demonstrating that there is an interaction effect between device and timing on engagement.

Table 3. 4 Negative Binomial Model for Post Reactions

	Coeff.	SE	Z	P-value	
Use of Mobile	2.007	0.144	13.96	0.000	***
Immediate	0.009	0.285	0.03	0.975	
Mobile x Immediate	0.734	0.396	1.85	0.064	*
Amount Spent	0.000	0.000	3.85	0.000	***
Campaign Days	-0.005	0.003	-1.85	0.066	*
Use of Photo	0.823	0.142	5.78	0.000	***
Log of Text Length	-0.978	0.181	-5.41	0.000	***
Topic: Music	-0.359	0.159	-2.25	0.024	**
Topic: Sports	-0.164	0.163	-1.01	0.314	
Topic: Social Cause	-0.098	0.121	-0.80	0.421	
Topic: Other	0.033	0.148	0.22	0.825	
Topic: Product	0.752	0.214	3.51	0.000	***
Use of Images of People	0.443	0.177	2.51	0.012	**
Use of Celebrity	-0.060	0.158	-0.38	0.703	
Mentions Food Occasions	-0.640	0.184	-3.47	0.001	**
Mentions Beverage Occasions	0.058	0.177	0.33	0.742	
Call to Action: More Info	-0.165	0.082	-2.00	0.046	**
Call to Action: Engage	0.015	0.073	0.20	0.838	
Creativity	0.048	0.083	0.57	0.567	
Logic vs. Emotion	0.236	0.069	3.40	0.001	**
Use of Emoticon	-0.372	0.146	-2.55	0.011	**
Use of URL	0.306	0.193	1.58	0.114	
Use of Hashtag	-0.764	0.135	-5.66	0.000	***
Brand Fit	-0.188	0.089	-2.11	0.035	**
Understanding	0.073	0.108	0.68	0.498	
Use of Event	0.97	0.098	0.99	0.323	
Constant	9.432	1.116	8.45	0.000	***
				N=420	
				Wald chi2 = 1063.70	
				Prob > chi2= 0.0000	

****p<0.001; **p<0.05; *p<0.10* (Two Tailed Tests)

Table 3. 5 Negative Binomial Model for Post Shares

	Coeff.	SE	Z	P-value	
Use of Mobile	0.931	0.181	5.15	0.000	***
Immediate	-0.352	0.323	-1.09	0.276	
Mobile x Immediate	0.812	0.437	1.86	0.063	*
Amount Spent	0.000	0.000	4.48	0.000	***
Campaign Days	-0.011	0.004	-3.01	0.003	**
Use of Photo	-0.030	0.165	-0.18	0.856	
Log of Text Length	-0.752	0.211	-3.56	0.000	***
Topic: Music	-0.176	0.193	-0.91	0.362	
Topic: Sports	-0.614	0.183	-3.36	0.001	**
Topic: Social Cause	0.164	0.153	1.07	0.286	
Topic: Other	-0.361	0.176	-2.05	0.040	**
Topic: Product	0.572	0.276	2.07	0.038	**
Use of Images of People	0.379	0.224	1.69	0.090	*
Use of Celebrity	0.460	0.220	2.09	0.036	**
Mentions Food Occasions	-0.244	0.213	-1.15	0.251	
Mentions Beverage Occasions	0.077	0.221	0.35	0.727	
Call to Action: More Info	-0.208	0.096	-2.17	0.030	**
Call to Action: Engage	0.003	0.093	0.04	0.971	
Creativity	0.213	0.097	2.20	0.028	**
Logic vs. Emotion	0.405	0.078	5.19	0.000	***
Use of Emoticon	-0.408	0.174	-2.34	0.019	**
Use of URL	0.382	0.249	1.54	0.124	
Use of Hashtag	-0.635	0.172	-3.70	0.000	***
Brand Fit	-0.312	0.106	-2.93	0.003	**
Understanding	-0.042	0.136	-0.31	0.758	
Use of Event	-0.101	0.129	-0.78	0.436	
Constant	5.115	1.489	3.43	0.001	**
				N=420	
				Wald chi2 = 460.90	
				Prob > chi2= 0.0000	

****p<0.001; **p<0.05; *p<0.10* (Two Tailed Tests)

In addition to reactions and shares, I also examined post comments using the same negative binomial model (Table 3.6). Results revealed a significant effect for device (β = .56, p = .001), a non-significant effect for timing (β = -.09, p = .81), and a non-significant interaction effect (β = .44, p = .38). I consider comments to be a different type of engagement metric from reactions and shares in the context of this research. This is because commenting is more likely an activity of creating content, while the other two metrics are closer to consuming contents. The results suggest that the main claim of the essay holds mainly in the context of message consumption rather than message creation. Because commenting on a post is closer to message creation, differing from reacting on and sharing the post, the interaction effects found in the reactions and shares model do not seem to be found in the comments model.

Lastly, the results from the negative binomial model were reported in Table 3.7 in order to address a concern with the analysis presented in Tables 3.4 and 3.5 that the model errors are potentially correlated within clusters. The Table 3.7 shows the results for the negative binomial model for post reactions and shares, which demonstrates that the effects also hold when clustering standard errors by post (β = .73, p = .097 for reactions; β = .81, p = .002 for shares).

Table 3. 6 Negative Binomial Model for Post Comments

	Coeff.	SE	Z	P-value	
Use of Mobile	0.558	0.162	3.45	0.001	**
Immediate	-0.088	0.374	-0.23	0.814	
Mobile x Immediate	0.444	0.505	0.88	0.379	
Amount Spent	0.000	0.000	4.84	0.000	***
Campaign Days	-0.008	0.003	-2.78	0.005	**
Use of Photo	-0.196	0.150	-1.31	0.191	
Log of Text Length	0.199	0.183	1.09	0.277	
Topic: Music	-0.646	0.161	-4.01	0.000	***
Topic: Sports	-0.320	0.175	-1.83	0.068	*
Topic: Social Cause	0.157	0.145	1.08	0.282	
Topic: Other	-0.357	0.175	-2.05	0.041	**
Topic: Product	0.730	0.224	3.25	0.001	**
Use of Images of People	0.482	0.213	2.26	0.024	**
Use of Celebrity	0.321	0.198	1.62	0.105	
Mentions Food Occasions	-0.589	0.222	-2.65	0.008	**
Mentions Beverage Occasions	0.043	0.212	0.20	0.838	
Call to Action: More Info	-0.110	0.089	-1.23	0.217	
Call to Action: Engage	0.057	0.078	0.74	0.460	
Creativity	0.056	0.104	0.54	0.592	
Logic vs. Emotion	0.157	0.069	2.28	0.022	**
Use of Emoticon	-0.204	0.165	-1.24	0.217	
Use of URL	0.245	0.218	1.13	0.260	
Use of Hashtag	-0.079	0.159	-0.50	0.617	
Brand Fit	-0.218	0.097	-2.24	0.025	**
Understanding	0.102	0.138	0.74	0.462	
Use of Event	0.075	0.133	0.57	0.571	
Constant	1.826	1.400	1.30	0.192	
				N=420	
				Wald chi2 = 214.66	
				Prob > chi2= 0.0000	

****p<0.001; **p<0.05; *p<0.10* (Two Tailed Tests)

Table 3. 7 Negative Binomial Model with Clustered Standard Errors by Post

	Reactions			Shares		
	Coeff.	SE		Coeff.	SE	
Use of Mobile	2.007	0.119	***	0.931	0.139	***
Immediate	0.009	0.298		-0.352	0.297	
Mobile x Immediate	0.734	0.442	*	0.812	0.256	**
Amount Spent	0.000	0.000	***	0.000	0.000	***
Campaign Days	-0.005	0.003		-0.011	0.004	**
Use of Photo	-0.978	0.215	***	-0.752	0.262	**
Log of Text Length	0.823	0.170	***	-0.030	0.205	
Topic: Music	-0.359	0.192	*	-0.176	0.241	
Topic: Sports	-0.164	0.190		-0.614	0.224	**
Topic: Social Cause	-0.098	0.145		0.164	0.191	
Topic: Other	0.033	0.173		-0.361	0.221	
Topic: Product	0.752	0.221	**	0.572	0.295	*
Use of Images of People	0.443	0.208	**	0.379	0.263	
Use of Celebrity	-0.060	0.177		0.460	0.266	*
Mentions Food Occasions	-0.640	0.209	**	-0.244	0.259	
Mentions Beverage Occasions	0.058	0.215		0.077	0.283	
Call to Action: More Info	-0.165	0.096	*	-0.208	0.122	*
Call to Action: Engage	0.015	0.083		0.003	0.116	
Creativity	0.048	0.089		0.213	0.113	*
Logic vs. Emotion	0.236	0.079	**	0.405	0.094	***
Use of Emoticon	-0.372	0.162	**	-0.408	0.221	*
Use of URL	0.306	0.217		0.382	0.296	
Use of Hashtag	-0.764	0.156	***	-0.635	0.209	**
Brand Fit	-0.188	0.100	*	-0.312	0.135	**
Understanding	0.073	0.119		-0.042	0.169	
Use of Event	0.097	0.115		-0.101	0.159	
		N=420			*N=420*	
		Wald chi2 = 1486.09			*Wald chi2 = 1486.09*	
		Prob > chi2= 0.0000			*Prob > chi2= 0.0000*	

****p<0.001; **p<0.05; *p<0.10* (Two Tailed Tests)

3.7 General Discussion

The number of smartphone users has been continuously growing worldwide in recent years, and consumers are also spending more time and performing more activities on mobile phones. Moreover, mobile phones are now the dominant device for communications on social media platforms. Marketing researchers have investigated how consumers' shopping experiences differ on mobile phones and how message generation differs on mobile phones compared to PCs. However, less is known about how message perception differs on mobile phones.

Through a combination of lab experiments and archival data analysis, I demonstrate how communications differ when consumers read messages on mobile phones instead of PCs. More specifically, my research demonstrates that reading a message on a mobile phone leads to lower-level construals compared to reading the same message on a PC. In a series of lab experiments, I found that consumers were more likely to prefer options with more positive peripheral (vs. central) aspects when the options were presented on mobile phones. These findings are consistent with differences in psychological distance inherent to different devices, such that consumers feel "closer" to their mobile phones than to PCs. In turn, this has implications for social media brand managers as they seek to effectively communicate with mobile phone users, who account for nearly 70% of the time spent on social media platforms (comScore.com). In another series of lab experiments and archival data analysis, I demonstrated that messages with more immediate timing are more effective in engaging consumers on mobile phones. In two lab experiments that manipulated temporal distance in social media posts, consumers' attitudes toward the post were higher for immediate messages when they

were read on mobile phones; furthermore, willingness to share and intention to purchase the product described in the message were higher for immediate messages on mobile phones. Analysis of actual Facebook branded posts yielded similar findings: more immediate messages generated more reactions and shares when consumers accessed them using mobile phones. It should be noted that the interaction effects between temporal distance and device were not found for comments on social media; among the three engagement metrics (reactions, shares, and comments), reactions and shares are closer to a message consuming behavior, while comments are more likely a message creating behavior. The results from the Facebook data analysis in this study supply evidence that the effects of device on construal level and their implications for social media content marketing hold in the context of message consumption, rather than message creation.

Taken together, this research contributes to the marketing literature by exploring how communications are influenced when consumers consume content on mobile phones versus PCs, drawing upon CLT in the extant literature. Based on the finding that a user's device is closely related to construal level when consuming a message, this research provides guidelines for social media marketing managers on how to design branded messages that are more effective when communicating with mobile phone users. For example, marketing managers used to use various temporal cues in messages depending on occasions; they might want to use more immediate temporal cues when introducing a new product while use more distant temporal cues when offering a deal. The findings of this essay suggests that social media marketing managers might have to consider using immediate temporal cues in both occasions, if they target mobile phone users.

While this research provides evidence that the influence of temporal distance in social media messages on engagement outcomes depends on users' devices, there are diverse content characteristics that managers can consider when designing branded social media messages. The idea that a user's device influences construal level when consuming a message has implications in various contexts; for example, managers may consider other types of distances in messages when communicating with consumers. The CLT literature considers other dimensions of distance such as social distance, spatial distance, or hypothetical distance, and different dimensions of distances are interrelated. Bar-Anan, Liberman, and Trope (2006) used an association between words related to construal level (low vs. high) and tested different dimensions of distances. In a series of experiments, they demonstrated that different dimensions of distances are all related to construal level in a similar way by being closely related to psychological distance.

Managers could also consider other processing effects related to temporal construal. For example, Liberman and Trope (1998) found that consumers are influenced by feasibility of options for near future activities, whereas they are influenced by desirability of options for distant future activities to a greater extent. In their study, the distinction between feasibility and desirability corresponds with the distinction between means, characterized by low-level (concrete) construals, and ends, characterized by high-level (abstract) construals (e.g., Gollwitzer and Moskowitz, 1996). Similarly, in more distant future gambles, amounts are weighted more and probabilities are weighted less (Sagristano, Trope, and Liberman, 2002). Discussion of message content characteristics related to construal levels as a direction of future research will be continued in the next section.

3.8 Limitations and Future Research Directions

While this research provides social media marketing managers with novel insights into how to create branded messages that consider a user's device, there are several concerns that have not been fully addressed in this essay but are important for future consideration.

First, while the research begins from the idea that the difference between mobile phones and PCs is the user's psychological distance from the device, it does not fully consider other possible differences within content between devices that could have influenced the results. For example, since screen size of the devices differs and mobile phones are smaller than PCs in general, content is often created in different formats for each device. Today, website administrators create mobile-friendly versions for those who access their website from mobile phones. While I believe that this factor did not significantly influence the results in this essay because the messages used in the studies were short paragraphs that did not differ greatly on each device, it may be worthwhile to explore other possible differences between devices in future research.

Second, it is possible that users' characteristics also differ by device they use. For example, users who accessed social media platforms from mobile phones could be mainly from younger generations than PC users. In addition, the lab experiments were not able to fully randomize participants because both device users were recruited separately. It is possible that demographics or other characteristics of each group were systematically different, which could also have influenced the study results. It would be a meaningful future direction to examine users' different characteristics by device and how this affects communications.

Third, this essay argues that psychological distance between user and device drives the findings in the studies, but empirical evidence of the idea itself is not fully addressed in this essay. Although it was difficult to test and present evidence that supports the idea due to the nature of it, it would be beneficial if a future study could find a way to test if use of different devices leads to different levels of psychological distance.

Since this essay is among the first to demonstrate the relationship between user device and construal level, there are various ways to extend and develop the idea in various contexts in the future. First, as mentioned above, different dimensions of distance are interrelated and all translated to psychological distance. In addition to temporal distance, other dimensions of distance such as social distance, spatial distance, or hypothetical distance can also be utilized in social media branded messages. One example is branded messages that target individuals more directly (e.g., calling their names or knowing their locations) so that consumers perceive that the message is directed to themselves specifically and not to others. Another example is messages that contain issues or people that are more similar or closer to themselves. Hypothetical distance can also be used in promotional messages, such as chances to win a contest or receive a coupon. By applying the same mechanism used in this research, various message cues that contain such distances could be examined in order to provide more meaningful insights for marketing managers.

Second, while this essay is based on the idea that psychological distance leads to construal level in the context of user device, the mechanism underlying the relationship between psychological distance and construal level in this context could be explored

further. Yan, Sengupta, and Hong (2016) found that psychological distance influences construal level through visual/verbal processing. According to their findings, shorter distance leads people to rely more on visual processing, yielding low-level construal, whereas longer distance leads to verbal processing that yields high-level construal. It would be worthwhile to examine the mechanism in this research context to see if processing differs by user's device.

Third, one could extend the idea to other contexts beyond promotional messages in social media and examine whether user device influences other behavior or other types of messages as well. For example, prosocial behavior is also found to be related to construal level, such that high-level construal leads to greater engagement in prosocial behavior. It would be a meaningful direction to examine whether use of mobile phones versus PCs influences the extent to which a user is engaged in prosocial behavior or prosocial messages.

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Appendix A: Stimuli Used in Study 1a (Chapter 3)

Interesting job with uninteresting training was described as follows:

> This work-study job is in a social psychology lab and requires participation in a study on humor and attitudes towards different types of jokes. The job will involve judging and measuring people's evaluations of the funniness of cartoons, movies, and jokes. It will also require predicting and testing other people's reactions and evaluations of the same materials. The job will require preliminary training that involves a few sessions of learning the basics of attitude measurement (e.g., what are the different methods available for measuring attitudes, how scales are constructed and validated, and when each type of measurement should be used).

Uninteresting job with interesting training was described as follows:

> This work-study job is in a social psychology lab and requires participation in a study on attitude measurement. The study will measure people's' attitudes regarding abstract figures, political issues, or actual products, using different scales. The job will involve mainly entering the data, and examining whether the attitudes elicited by the different types of measurement are similar or not. The job will require preliminary training that involves a few sessions of learning the basics of attitudes change through analyzing commercial ads in papers and TV (e.g., what techniques are used by commercial companies to influence people's attitudes? How do these vary according to the type of product being advertised and the type of audience?).

Appendix B: Stimuli Used in Study 1b (Chapter 3)

Participants in the *high-level positive (i.e, good radio), low-level (i.e., bad clock) negative* condition read the following description:

> Imagine that you will buy a radio set. You need a simple set in the kitchen to listen to morning programs and music when you get up. When you arrive home, you discover that it fits just great in the place you wanted to put it, and the sound is really good. However, the clock that is built into the set turns out to be pretty useless. The digits are too small and can be hardly seen unless you stand right in front of it.

Participants in the *high-level negative (i.e., bad radio), low-level positive (i.e., good clock)* condition read the following description:

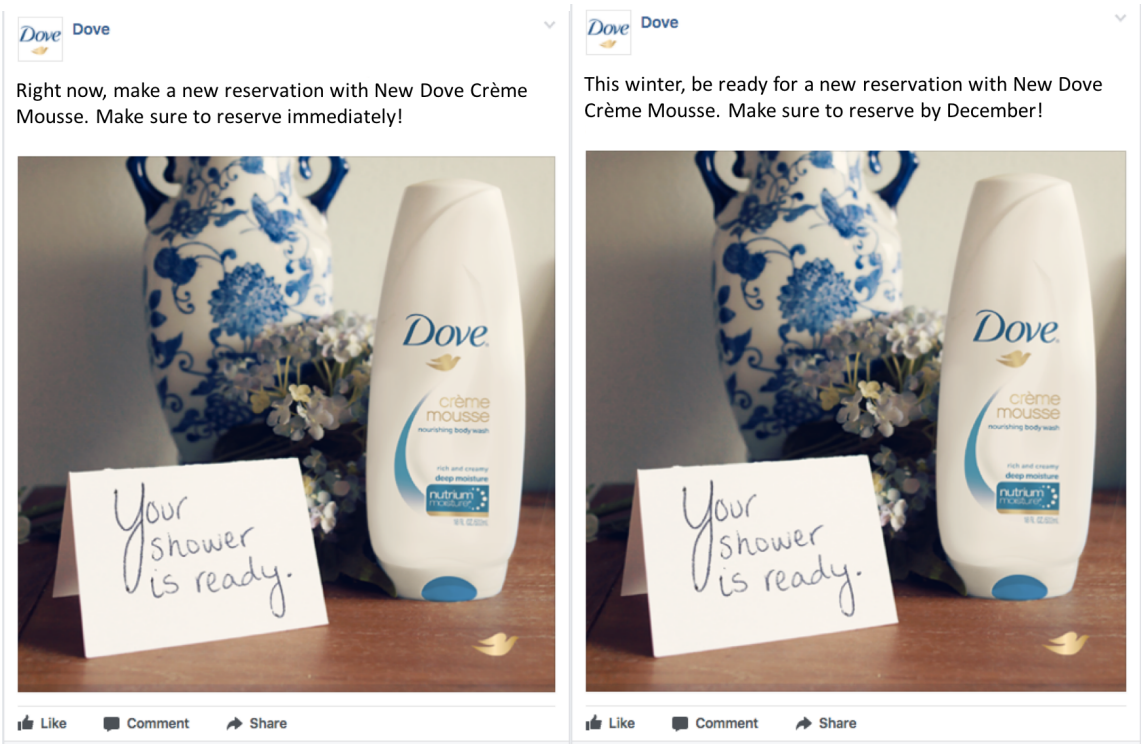
> Imagine that you will buy a radio set. You need a simple set in the kitchen to listen to morning programs and music when you get up. When you arrive home, you discover that if you put the set in the place you wanted, the reception is bad, and to get reasonable reception you have to put it in a rather inconvenient place. However, the clock that is built into the set turns out to be pretty useful. It has large clear digits which can be easily seen from anywhere in the kitchen.

Appendix C: Stimuli Used in Study 2a (Chapter 3)

Immediate

Distant Future

Appendix D: Stimuli Used in Study 2b (Chapter 3)



Immediate Distant Future